U.S. ARMY CORPS OF ENGINEERS
CIVIL WORKS PROGRAM

CONGRESSIONAL SUBMISSION
FISCAL YEAR 2002

REMAINING ITEMS

Budgetary information will not be released
Outside the Department of the Army until
3 April 2001

Justification of Estimates for Civil Functions Activities
Department of the Army, Corps of Engineers
Fiscal Year 2002

REMAINING ITEMS

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SUMMARY OF REMAINING ITEMS

GENERAL INVESTIGATIONS

	FY 2001 Conference	FY 2002 Request	Increase (Decrease)
	$	$	$
1. Surveys	14,700,000	14,100,000	(600,000)
c. Special Studies	0	400,000	400,000
e. Coordination with Other Federal Agencies, States, and Non-Federal Interests	14,700,000	13,700,000	(1,000,000)
(1) Planning Assistance to States	6,700,000	6,500,000	(200,000)
(2) Other Coordination Programs			
(a) Special Investigations	3,832,000	3,790,000	(42,000)
(b) Gulf of Mexico Program	162,000	100,000	(62,000)
(c) Chesapeake Bay Program	225,000	100,000	(125,000)
(d) Pacific Northwest Forest Case Study	360,000	100,000	(260,000)
(e) Interagency Water Resources Development	1,708,000	1,400,000	(308,000)
(f) Interagency and International Support	230,000	230,000	0
(g) Inventory of Dams	449,000	450,000	1,000
(h) National Estuary Program	90,000	90,000	0
(i) North American Waterfowl Management Plan	90,000	90,000	0
(j) Estuary Habitat Restoration Program	--	200,000	200,000
(k) Coordination with Other Water Resources Agenci	449,000	450,000	1,000
(l) CALFED	225,000	100,000	(125,000)
(m) Lake Tahoe, NV	180,000	100,000	(80,000)

Justification of Estimates for Civil Functions Activities
Department of the Army, Corps of Engineers
Fiscal Year 2002

SUMMARY OF REMAINING ITEMS

GENERAL INVESTIGATIONS

	FY 2001 Conference	FY 2002 Request	Increase (Decrease)
	$	$	$
2. Collection and Study of Basic Data	14,750,000	14,750,000	0
a. Flood Plain Management Services	8,200,000	8,200,000	0
c. Other Programs			
(1) Stream Gaging (U.S. Geological Survey)	700,000	700,000	0
(2) Precipitation Studies (National Weather Service)	400,000	400,000	0
(3) International Waters Studies	500,000	500,000	0
(4) Hydrologic Studies	500,000	500,000	0
(5) Scientific and Technical Information Centers	100,000	100,000	0
(6) Coastal Field Data Collection	2,200,000	2,200,000	0
(7) Transportation Systems	700,000	700,000	0
(8) Environmental Data Studies	100,000	100,000	0
(9) Remote Sensing	300,000	300,000	0
(10) Automated Information Systems Support	650,000	650,000	0
(11) Flood Damage Data Program	400,000	400,000	0
3. Research and Development	25,000,000	24,000,000	(1,000,000)
Totals	54,450,000	52,850,000	(1,600,000)

APPROPRIATION TITLE: General Investigations, FY 2002

1. Surveys

Special Studies

Study	Total Estimated Federal Cost	Allocation Prior to FY 2001	Allocation FY 2001	Tentative Allocation FY 2002	Additional to Complete After FY 2002
National Shoreline	7,000,000	0	0	300,000	6,700,000

SCOPE:

The study is an interagency effort to determine the extent and cause of shoreline erosion on all the coasts of the United States and to assess the economic and environmental impacts of that erosion. The study will analyze the appropriate Federal and non-Federal roles and the advisability of using a systems approach to sediment management for linking the management of all (shore protection, navigation channel dredging, and environmental restoration and preservation) projects in the coastal zone so as to conserve and efficiently manage the flow of sediment within littoral systems.

ACCOMPLISHMENTS:

FY 2002 funding would initiate work on this study. The Fiscal Year 2002 efforts include:

$150,000 for the Institute for Water Resources to (1) coordinate work on the economic analysis among Corps Divisions and Districts on a regional basis, (2) coordinate with appropriate non-governmental organizations concerned with these issues, and (3) to establish the overall study framework

$100,000 for the Coastal and Hydraulics Laboratory to (1) establish technical guidelines for collecting and analyzing data on the extent and causes of shoreline erosion, (2) coordinate work within Corps Divisions and Districts on a regional basis, and (3) coordinate with the U.S. Geological Survey and the National Ocean Service as they participate in the data collection and analysis; and

$50,000 for the Environmental Laboratory to (1) establish technical guidelines for collecting and analyzing data on the environmental impacts of shoreline erosion, (2) coordinate work within Corps Divisions and Districts on a regional basis, and (3) coordinate with the other Federal agencies in the collection and analysis of environmental impacts.

Section 215 of the Water Resources Development Act of 1999 provides the authority for conducting this study with completion scheduled for 30 Sep 2005.

APPROPRIATION TITLE: General Investigations, FY 2002

1. Surveys

c. Special Studies

Study	Total Estimated Federal Cost	Allocation Prior to FY 2001	Allocation FY 2001	Tentative Allocation FY 2002	Additional to Complete After FY 2002
(1) Project Monitoring	1/	0	0	100,000	1/

SCOPE:

The study is a comprehensive effort to precisely evaluate the economic and environmental results of 5 projects over at least a 12 year period. The projects to be monitored will be water resources projects, or separable elements thereof, for which a contract for physical construction has not been awarded before the enactment of the Water resources Development Act of 2000 (WRDA 2000); that has a total cost of more than $25,000,000; and that has a benefit-to-cost ratio of less than 1.5 to 1 or that has significant environmental benefits or significant environmental mitigation components. The Congress will receive a report every 3 years on the performance of each selected project.

ACCOMPLISHMENTS:

FY 2002 funding would initiate work on this study. The Fiscal Year 2002 efforts include:

- assembling a team of representatives from Headquarters, Division, district, and other elements suh as the Institute for Water Resources (IWR), to develop a scope of work and implementation plan for carrying out this provision.

- developing selection criteria (within the requirements set forth in the legislation) for the projects which will ultimately be selected,

- developing and recommending detailed economic and environmental evaluation procedures for the projects selected for monitoring

- developing a public participation program.

Section 223 of WRDA 2000 provides the authority for conducting this study, and directs that the study will be conducted at full federal Expense.

1/ to be determined.

APPROPRIATION TITLE: General Investigations, FY 2002

1. Surveys

e. Coordination with Other Federal Agencies, States, and Non-Federal Interests

(1) Planning Assistance to States

SCOPE:

This Corps of Engineers program stems from Section 22 of the Water Resources Development Act of 1974, as amended, which authorizes the Secretary of the Army to assist States, local governments, Indian tribes, and other non-Federal entities in the preparation of comprehensive plans for the development, utilization, and conservation of water and related land resources. This assistance is in the form of reconnaissance-level studies which provide information and guidance to help the non-Federal sponsors become more active and effective working partners with the Federal government in resolving water resources problems. The studies are cost-shared on a 50% Federal, 50% non-Federal basis. The program can encompass many types of studies dealing with water resources issues, including environmental conservation/restoration, wetlands evaluation, water supply and demand, water quality, flood damage reduction, coastal zone management, and dam safety.

SUMMARIZED FINANCIAL DATA:

Estimated Five-Year (FY 2002-2006) Program Cost	$40,000,000
Tentative Allocation for FY 2002	6,500,000
Balance to Complete Five-Year Program after FY 2002	33,500,000
Allocation for FY 2001	6,700,000
Increase of FY 2002 from FY 2001	(200,000)
Average Annual Allocation or FY 1997-2001	4,870,000

JUSTIFICATION:

The Planning Assistance to States program has continued to evolve into a highly effective tool for providing technical and planning assistance to states, local governments, and Indian tribes. These customers recognize the need to develop locally-directed solutions to their water resources problems. Interest from states, regional and local governments, Indian tribes, and other non-Federal public agencies in this highly efficient and effective Program continues to grow. The FY 2002 amount will enable the Corps to provide much needed planning and technical assistance to aid them in a wide variety of water resource efforts, including environmental restoration studies, watershed planning, and flood plain management planning. Currently, there are ongoing studies which require additional funds to complete, and a number of studies yet unfunded which have been identified by states, communities, and Indian Tribes as high priority studies. The FY 2002 request will allow the Corps to continue and complete ongoing studies, and initiate additional high priority studies.

APPROPRIATION TITLE: General Investigations, FY 2002

1. Surveys

e. Coordination with Other Federal Agencies, States, and Non-Federal Interests

(1) Planning Assistance to States (Continued)

ACCOMPLISHMENTS:

The Corps of Engineers provided technical and planning assistance for a full range of water resources issues, including watershed management, wetlands identification, environmental restoration, water supply, water quality, and flood damage reduction. In fiscal year 2000, 145 studies were performed for 43 states, as well as seven studies for Federally-recognized Indian tribes.

APPROPRIATION TITLE: General Investigations, FY 2002

1. Surveys

e. Coordination with Other Federal Agencies, States, and Non-Federal Interests (Continued)

(2) Other Coordination Programs

Allocation For FY 2001 $8,000,000 Tentative Allocation FY 2002 $7,200,000

(a.) The Special Investigations request is $3,790,000. The amount of $180,000 provides for; the review of preliminary permit and licenses applications for non-Federal hydroelectric power development either at or affecting Corps water resource projects. The amount of $3,610,000 provides for (1) special investigations and reports of nominal scope prepared pursuant to Congressional and other requests from outside the Corps of Engineers for information relative to projects or activities which have no funds; (2) similar work of detailed scope, as specifically authorized by the Chief of Engineers; and (3) review of reports and environmental impact statements of other agencies. Among the investigations paid for from these funds are reconnaissance investigations of flooding potential and flood damages, drainage, harbor improvements, anchorages, and development of navigation channels.

(b.) The Gulf of Mexico Program (GMP) request is $100,000. The GMP is formulating and implementing creative solutions to economic and environmental issues with Gulf-wide and national implications. Hypoxia/nutrient enrichment, Habitat, Public Health (Shellfish) and Nonindigenous Species are the focus issue areas, which are linked to authorized Corps missions in the five-state GMP area. The Hypoxia and Habitat focus areas are now getting more emphasis…through the Clean Water Action Plan and links to a multitude of Corps programs. U.S. Environmental Protection Agency-initiated, the GMP is partnership-driven, blending the programs and resources of Federal, state and local governments, with the resources and commitments of business, industry, citizens groups and academia. The Corps has a full time staff member serving as liaison to the GMP Office (GMPO). That individual's primary duty is to provide the linkage between the Southwestern, Mississippi Valley and South Atlantic Major Subordinate Commands and their districts and the current and evolving activities of the GMP/GMPO. Personnel from several districts and divisions serve on various committees and focus area groups. Secondary duties of the Corps liaison include: 1) coordinating with and supporting the Corps representative on the GMP's Management Committee as well as the DOD representative serving on the GMP's Policy Review Board; 2) functioning as the Corps' alternate Management Committee representative; 3) functioning as a GMPO Interagency Management Team Member; 4) mentoring the GMPO Habitat Focus Team; and, 5) serving as a member of the GMPO Hypoxia Focus Team. The Corps liaison also serves as the Corps' functional and program link to the Coastal America-Gulf of Mexico Regional Implementation Team (RIT). The requested funds will ensure the full participation of the Corps in implementation of GMP-formulated initiatives.

APPROPRIATION TITLE: General Investigations, FY 2002

1. Surveys

e. Coordination with Other Federal Agencies, States, and Non-Federal Interests

(2) Other Coordination Programs (Continued)

(c.) Chesapeake Bay Program. The amount of $100,000 is requested to continue activities initiated under Special Investigations. The Chesapeake Bay Program (CBP) is an interagency program, initiated by the US Environmental Protection Agency (EPA), for the protection and restoration of the bay's natural resources. These natural resources have tremendous environmental and economic significance to the northeast region and to the Nation. Following extensive Corps of Engineers investigations and EPA studies in the 1970's and early 1980's, it became increasingly clear that the Chesapeake Bay as a system was under intense pressure from development and overuse and was undergoing degradation in water quality, living resources and other ecological indicators. With the funds requested, the Baltimore District will continue participation in the CBP Implementation Committee and the Federal Agencies Subcommittee addressing various subjects such as wetlands, submerged aquatic vegetation, and land stewardship. The Baltimore District will accomplish limited work associated with the lead on two initiatives (Anacostia Biennial Workplan and Chesapeake Bay Habitat Restoration) from the Agreement of Federal Agencies on Ecosystem Management in the Chesapeake Bay signed in July 1994 and its successor, the Federal Agencies Chesapeake Ecosystem Unified Plan (FACEUP) signed by the ASA(CW) in 1998, as well as participating in workgroups on other aspects of the agreements. ASA(CW) was a signatory on a Special Tributary Strategy for Federal Lands in the District of Columbia agreement that commits the Corps to develop stormwater pollution prevention and nutrients management plans. Many of these actions affect Corps authorized missions in the Chesapeake Bay. It is very important for the Corps representatives to be active members of the CBP Implementation Committee, the Federal Agencies Subcommittee, the Federal Agencies Subcommittee and other working groups.

(d.) The Pacific Northwest Forest Case Study request is $100,000. The Northwest Forest Plan (NFP) is an interagency program, initiated by the White House's Council of Environmental Quality, for ecosystem management of the public lands in the Pacific Northwest within the range of the Northern Spotted Owl. In FY 1999, the Corps of Engineers became an official signatory agency to the NFP Memorandum of Understanding. The NFP institutes an interagency approach for restoring and protecting animal and plant species on public lands and provides for economic assistance to impacted communities. With the funds requested, Portland District will participate in NFP activities as an external representative on a part-time basis. NFP participants are presently concentrating on the development of coordinated Implementation Monitoring and Effectiveness Monitoring Programs while continuing to refine and implement its watershed-scale ecosystem management strategies. Many of these strategies and programs involve, and will benefit from, the Corps authorized missions throughout the western states. The NFP presents the best outreach opportunity for the Corps to expand its involvement with the other agencies of the Federal and State communities to use all of our engineering and environmental capabilities to address many of government's missions.

APPROPRIATION TITLE: General Investigations, FY 2002

1. Surveys

e. Coordination with Other Federal Agencies, States, and Non-Federal Interests

(2) Other Coordination Programs (Continued)

(e.) The Interagency Water Resources Development request is $1,400,000. This amount provides $1,200,000 for Corps of Engineers district activities, not otherwise funded, that require coordination effort with non-Federal interests. These activities include items such as meeting with City, County and State officials to help them solve water resources problems when they have sought advice or to determine whether Corps programs are available and may be used to address the problems. This will also cover costs of meeting with potential study sponsors before studies are budgeted to insure they understand study cost sharing and to obtain an indication of their interest in participating in a future study. It also provides $100,000 each for two American Heritage River Navigators who are supported by the US Army Corps of Engineers, based upon Executive Order 13061, dated 11 September 1997. These River Navigators provide direct support to the Community Partners for the New River, which flows through NC, VA and WV; and for the Upper Mississippi River above St. Louis, MO. The navigators assist the individual communities and community partners in accessing a variety of Federal programs to achieve the goals in the river workplans. These workplans are a product of river community partners' locally-driven, watershed management approaches. Goals include economic revitalization, environmental restoration, and historic and cultural preservation. Immediate targets in the communities' river workplans include improvements such as land cleanup, alternative agriculture and aquaculture projects, community reutilization, educational outreach, stormwater runoff, downtown and riverfront improvements and preservation of historic features in river communities. The River Navigators provide a conduit and coordination link between the community partners and the various Federal programs which might apply to, and provide funding sources for the individual projects.

(f.) The request is $230,000 for Interagency and International Support to allow the Corps of Engineers to participate with other Federal agencies and international organizations to address problems of national significance to the United States. The Corps of Engineers has widely recognized expertise and experience in water resources, infrastructure planning and development, and environmental protection and restoration. Frequently, other Federal agencies, particularly the State Department and the Environmental Protection Agency, and international organizations request use of the Corps talents in addressing domestic or international problems of utmost importance to the United States. Often the requesting entity is not able to reimburse all Corps costs, including salaries, but yet the success of the program can be greatly enhanced by employing the talents of the Corps. In many cases the Corps abilities to perform its civil works mission or promote opportunities in the U.S. private sector are also enhanced. In FY 2001, the program funds are being used to support the State Department on Middle East and other global water issues, the World Water Council, the Federal Emergency Management Agency, the Environmental Protection Agency on Brownfields, and other initiatives of national importance. The requested funds will be used to cover Corps salary and travel costs not otherwise available. International activities will be undertaken only after consultation with the State Department.

APPROPRIATION TITLE: General Investigations, FY 2002

1. Surveys

e. Coordination with Other Federal Agencies, States, and Non-Federal Interests

(2) Other Coordination Programs (Continued)

(g.) The amount of $450,000 is requested for continued maintenance and publication of the National Dam Inventory. Section 215 of the Water Resources Development Act of 1996 (Public Law 104-303) authorized $500,000 to be appropriated each fiscal year for the maintenance and publication of the National Dam Inventory. The Inventory was initially compiled in 1975 has been periodically updated to reflect construction of new dams, ownership changes, modifications to existing dams, and improvements in the accuracy and completeness of the data. The current update includes over 77,000 dams, and focuses on current technology, integrating computer software into the inventory package to improve the ease of use, accuracy, and accessibility of the data. These funds will be used to implement improved information flow and data quality control processes, to greatly enhance the state of knowledge management for dam safety. The inventory will continue to be improved utilizing rapidly evolving technology including enhanced World Wide Web access, a Geographic Information System (GIS) interface, and integration with other dam safety resources. The importance of continued maintenance and publication of the National Dam Inventory has increased, as the inventory is now required for use by the Director of FEMA and the National Dam Safety Review Board in the allocation of dam safety program assistance funds to the various States in proportion to the number of dams in the state. Inventory data is also included in the biennial report to Congress on the National Dam Safety Program. The ongoing maintenance and publishing of the Inventory is a coordinated effort involving data from the Federal and non-federal Dam Safety community in cooperation with the Interagency Committee on Dam Safety (ICODS).

(h.) The amount of $90,000 is requested to participate with Federal and State agencies in the National Estuary Program (NEP) administered by the Environmental Protection Agency under the Water Quality Act of 1987 (Section 320 of PL 100-4). The NEP is an interagency planning program to develop management plans for nationally significant estuaries designated by the EPA. To date, the following 26 estuaries have been designated under the program: Puget Sound, WA; Delaware Bay, DE: and Delaware Inland Bays, DE; New York/New Jersey Harbor, NY-NJ; Sarasota Bay, FL; Santa Monica Bay, CA; San Francisco Bay, CA; Galveston Bay, TX; Albermarle/Pamlico Sound, NC; Buzzards Bay, MA; Narrangansett Bay, RI; and Long Island Sound, CT-NY, NY; Massachusetts Bay, MA; Barataria/Terrebonne Bays, LA; Indian River Lagoon, FL; Casco Bay, ME; Tampa Bay, Fl; San Juan Bay, PR; Corpus Christi Bay, TX; Tillamook Bay, OR; and Peconic Bay, NY. Because of extensive Corps involvement with Federal water resources projects in the nation's estuaries and other responsibilities in waters of the U.S., the Corps has been asked to participate on the management and technical advisory committees of those NEP estuaries being studied. The requested funds would be used to cover costs of Corps field office meeting attendance, field reconnaissance, and data transfer. Because of similar objectives, these funds could be used for similar coordination activities conducted under the Coast America initiative.

APPROPRIATION TITLE: General Investigations, FY 2002

1. Surveys

e. Coordination with Other Federal Agencies, States, and Non-Federal Interests

(2) Other Coordination Programs (Continued)

(i.) The amount of $90,000 is requested to continue cooperation with Federal and State agencies, and non-Federal interests in support of the North American Waterfowl Management Plan (NAWMP) administered by the Department of the Interior, Fish and Wildlife Service. The NAWMP is an international program designed to reverse downward trends in North America's waterfowl populations by protecting and improving waterfowl habitats nationwide, particularly in 34 areas within the United States identified as being critical to meeting NAWMP goals and objectives. Department of the Army support to the NAWMP is set forth in an agreement signed with the Department of the Interior on January 23, 1989. The Corps of Engineers has broad water resources development responsibilities and authorities and has stewardship responsibilities for over seven million acres of water and land. Many Corps of Engineers projects contribute directly or indirectly to the habitat base for the nation's waterfowl, and other wetland species. Current and future Corps of Engineer projects are expected to play an even greater role, particularly during years of low rainfall. Also, the Corps of Engineers has recognized extensive environmental engineering and technical expertise and experience that can contribute greatly toward meeting the NAWMP waterfowl habitat improvement goals and objectives. The requested funds would be used to cover costs of Corps of Engineers field office participation in the field trips, interagency coordination meetings, and information transfer in response to conditions set forth in the agreement between the Department of the Interior and the Department of the Army. Because of similar objectives, these funds could also be used for similar coordination activities conducted under the Coastal America initiative.

(j.) The Estuary Habitat Restoration Program request is $200,000. This is a new initiative to support the interagency council established in the Estuary Restoration Act of 2000. This act establishes an estuary habitat restoration program under which the Secretary of the Army may carry out estuary habitat restoration projects. It also establishes a Council consisting of representatives of the Under Secretary for Oceans and Atmosphere, Department of Commerce; the Administrator of the Environmental Protection Agency, the Director of the United States Fish and Wildlife Service, the Secretary of Agriculture and the Secretary of the Army. This Council has responsibilities to develop a national strategy for restoration of estuary habitat and soliciting, reviewing, and evaluating project proposals and submitting a list of recommended projects to the Secretary for implementation. The requested funds would be used to aid in the development of the national strategy and other activities necessary to support the Council. Among the specific activities might be data collection and evaluation and hosting regional meetings.

APPROPRIATION TITLE: General Investigations, FY 2002

1. Surveys

e. Coordination with Other Federal Agencies, States, and Non-Federal Interests

(2) Other Coordination Programs (Continued)

(k.) The Cooperation With Other Water Resources Agencies request is $450,000. Cooperation with the Department of Agriculture (USDA) is under the Watershed Protection and Flood Prevention Act of 1954 (Section 5 of PL 566-83), as amended; the Flood Control Act of December 22, 1944 (Section 1 of PL 534-78), as amended; and the National Environmental Policy Act of 1969 (PL 91-190). Executive Order No. 10913, dated 18 January 1961, requires that cognizance be taken of constructed and contemplated upstream and downstream USDA works, and that plans be submitted to the Secretary of the Army for review and comment prior to their transmission to the Congress through the President. As the agency responsible for the flood control features of basin program, the Corps of Engineers must provide the Department of Agriculture with information on proposed Corps projects, including their effect on contemplated watershed programs. The Corps is also required by Section 102 (2)(c) of the National Environmental Policy Act of 1969 to review the environmental impacts which would result from installation of USDA project features. Cooperation with the Bureau of Reclamation of the Department of the Interior includes preparation of estimates of flood control requirements, and benefits, and reservoir operating criteria for storage reservoirs to be constructed with Federal funds, in accordance with Sections 1 and 7 of PL 534-78 and Section 7 of PL 984-84, as amended. Studies made by the Bureau of Reclamation of the flood control features of proposed reclamation projects are submitted to the Corps of Engineers for review and determination of the flood control benefits. The Corps of Engineers uses the data collected by the Bureau but makes an independent evaluation of the project. The report of the Chief of Engineers is used by the Secretary of the Interior in making allocation of project cost to flood control. Corps representation is required for cooperation with Federal and state agencies such as River Basin Compact Commissions; Interstate River Basin Compacts; and Regional Planning Commissions in authorized, but unfunded investigations.

(l.) The CALFED request is $100,000, which will be used to continue the coordination efforts in the CALFED Bay Delta process in Fiscal Year 2002. The CALFED Bay-Delta Program is a three-phased solution process for the development of a long-term comprehensive plan that will restore ecological health and improve water management for beneficial uses of the Bay-Delta system. Phase I, the identification of the range of alternatives, was completed in fall 1996. Phase II was completed 28 Aug 00 with the signing of the Record of Decision defining the programmatic plan. Phase III initiated Sep 00 and is a 7 to 30 year process. As outlined in the ROD, the Corps with the State of California, are co-managers of the CALFED Phase III program element, Levee System Integrity, and will provide specific technical and implementation support.

(m.) The request for Lake Tahoe is $100,000. This funding is required to continue work associated with Lake Tahoe Federal Interagency Partnership. The Corps is a founding member of this partnership established to insure cooperation, support and synergy among Federal department and agencies having principle management or jurisdictional authorities in the Lake Tahoe Basin. Partnership action work toward the preservation of the natural, recreational, ecological and economic resources in the Lake Tahoe Region. FY 2002 activities will include working with the Tahoe Regional Planning Agency to develop opportunities for restoration in the Lake Tahoe Basin and working with local and state agencies, public advisory committees, and staff work to support District, Division and HQ executive level involvement.

APPROPRIATION TITLE: General Investigations, FY 2002

2. Collection and Study of Basic Data

a. Flood Plain Management Services

SCOPE: This Corps of Engineers program stems from Section 206 of the 1960 Flood Control Act (PL 86-645), as amended, which authorizes the Secretary of the Army to compile and disseminate data on floods and flood damage potential and to provide guidance in their use in flood-related planning to State and local agencies. This information and guidance supports planning and implementing actions which reduce the flood hazard through wise use of flood plains. The Flood Plain Management Services Program provides flood hazard information, interpretation, and guidance for sites or short reaches of stream or coast and technical and planning assistance to states, communities and Indian Tribes; develops and disseminates guides and pamphlets to convey the nature of flood hazards and to foster public understanding of the options for dealing with flood hazards; and participates with the Federal Emergency Management Agency and local governments in the conduct of pre-disaster hurricane evacuation and preparedness studies for mobilizing local community responsiveness to natural disasters in high-hazard coastal areas.

SUMMARIZED FINANCIAL DATA:

Estimated Five-Year (FY 2002-06) Program Cost	$50,000,000
Tentative Allocation for FY 2002	8,200,000
Balance to Complete Five-Year Program after FY 2002	41,800,000
Allocation For FY 2001	8,200,000
Increase of FY 2002 from FY 2001	0
Average Annual Allocation for FY 1997-01	8,109,000

JUSTIFICATION: The funds requested for FY 2002 are to address the growing number of requests from states, regional and local governments, Indian Tribes, and other non-Federal public agencies. An increase in funds allocation will enable states and local communities to become more involved in the application of flood plain management measures. It will provide them site-specific flood and flood plain data and assistance; assist with efforts to identify flood hazards in smaller communities under growth pressures; facilitate special studies that concentrate on the prevention of future flood damages, giving increased emphasis to the application of non-structural measures; and enable critical pre-disaster hurricane evacuation and preparedness studies for states and counties along the Atlantic and Pacific Oceans, the Gulf of Mexico, and US islands in the Caribbean and Pacific.

2. Collection and Study of Basic Data

a. Flood Plain Management Services (Continued)

ACCOMPLISHMENTS: Responses to requests from Federal and non-Federal agencies, communities, Indian Tribes and individuals for flood-related information, interpretation, and guidance numbered 44,300 during 2000 and involved property valued at $6.2 billion. The Corps participated in pre-disaster hurricane evacuation and preparedness studies for high-hazard areas in Louisiana, Massachusetts, Florida, Connecticut, North Carolina, South Carolina, New York, Puerto Rico, New Hampshire, Delaware, Maryland, Virginia, Georgia, Alabama, Mississippi, Hawaii, Guam, Samoa, and the Commonwealth of the Northern Mariana Islands; provided support for updating and improving mathematical models of flood plain hydrology and hydraulics; developed training programs in flood plain hydrology and hydraulics; and prepared flood-proofing studies.

APPROPRIATIONS TITLE: General Investigations, FY 2002

2. Collection and Study of Basic Data

c. Other programs

(1) Stream Gaging (U.S. Geological Survey)

SCOPE: The Corps of Engineers cooperates with the U.S. Geological Survey in this effort, and contributes funds for all or part of the cost of the operation and maintenance of about 2,520 stations that are of special importance to the Corps mission. The Corps established this continuing, cooperative program in March 1928, so that streamflow data would be available to meet special needs concerning the Corps water resources responsibilities.

SUMMARIZED FINANCIAL DATA:

Estimated five-year (FY 2002-2006) Program Cost	$4,800,000
Tentative Allocation for FY 2002	700,000
Balance to Complete five-year Program after FY 2002	$4,100,000
Allocation for FY 2001	525,000
Increase of FY 2001 from FY 2001	175,000
Average Annual Allocation for FY 1997-2001	645,000

JUSTIFICATION: The Corps of Engineers makes extensive use of streamflow records in the planning, design, construction, and operation of water resources projects. The Basic network of stream gaging stations operated by the Geological Survey under its normal functions without support from the Corps is inadequate to meet all the special needs of the Corps water resource development responsibilities. Accordingly, a cooperative program was established under which funds are transferred to the Survey to cover, partially, the cost of operating specific stations. In the optimum development and management of water resources, it is essential that continuous records of streamflow be maintained at specific sites over a long period of years to provide a reliable measure of water resources available for various uses. This budget item covers only the non-project portion of the cooperative program. To continue the operation of stations of special interest to the Corps, an estimated total of $17,730,000 will be required by the U.S. Geological Survey during FY 2002, exclusive of funds received from other cooperative sources. The operation and maintenance cost of these stations will be financed from three sources, as follows: (1) $530,000 appropriated directly to the U.S. Geological Survey for special Corps stations; (2) $800,000 from this budget item for stations not directly attributed to the Corps projects; and (3) $16,400,000 from Corps funds budgeted elsewhere for authorized projects and studies. The basic program will remain at essentially the same level as in previous years.

APPROPRIATIONS TITLE: General Investigations, FY 2002

2. Collection and Study of Basic Data

c. Other programs

(1) Stream Gaging (U.S. Geological Survey) (Continued)

ACCOMPLISHMENTS: Records for the streamflow stations supported by transfer of funds are not only used by the Corps, but the data are used by the National Weather Service as the basis for many public flood forecasts. In addition, the data are published on the Internet and in a regular series of reports by the Geological Survey and provide valuable information for other Federal and state agencies and the public.

COORDINATION: This program is fully coordinated with the U.S. Geological Survey. Costs for conducting the work are compiled by representatives of the Survey to identify a basis for the transfer of funds to that agency.

APPROPRIATION TITLE: General Investigations, FY 2002

2. Collection and Study of Basic Data

c. Other Programs

(2) Precipitation Studies (National Weather Service)

SCOPE:

This is the Hydrometeorological Studies Program conducted for the Corps of Engineers by the National Weather Service (NWS). The NWS performs analyses of storm rainfall and other meteorological data required to develop hydrologic criteria for use by the Corps in planning, design and water control management of flood control and water resources development projects, and in floodplain management studies. The Corps transfers funds to the NWS to pay for the work.

SUMMARIZED FINANCIAL DATA:

Estimated Five-Year (FY2002-2006) Program Cost	$ 2,500,000
Tentative Allocation Requested for FY 2002	400,000
Balance to Complete Five-Year Program after FY 2002	2,100,000
Allocation for FY2001	304,000
Change in FY 2002 over FY2001	96,000
Average Annual Allocation for FY 1997-2001	324,000

JUSTIFICATION:

The scientific services provided by the National Weather Service under this program consist of : (1)review of the meteorological aspects of storm data compiled under the Hydrologic Studies Program conducted by the Corps; (2) development of probable maximum precipitation (PMP) estimates and occurrence probability of storms for large regions and for specific river basins; (3) precipitation depth-duration-frequency estimates for regions and the nation; (4) development of meteorological parameters pertaining to hurricanes, northeasters and other wind phenomena; and (5) other studies necessary to accomplish the Corps mission. Funds in the amount of $400,000 will be required in FY 2002 to continue the program at a level consistent with Corps needs. The entire cost of the Corps hydrometeorological studies program is funded under this budget item.

2. Collection and Study of Basic Data

c. Other Programs

(3) Precipitation Studies (National Weather Service) (Continued)

ACCOMPLISHMENTS:

A study of precipitation frequency for the semi-arid southwestern U.S., which began in FY 1991, was completed and published as the first volume of NOAA Atlas 14. This is a major accomplishment and sets the standard for similar studies of the rest of the U.S. that will commence in time. Work on the precipitation-frequency study for the Hawaiian Islands resumed after several years of postponement and delay. Work on the precipitation-frequency study of Ohio River basin states continued to make major progress during FY 2001. Work commenced on the review of PMP for the Cougar Lakes project.

FISCAL YEAR 2002:

The major efforts in FY 2002 will be to continue work on revision of the Precipitation-Frequency Atlas for the United States (NOAA Atlas 14), with emphasis given to: (a) completing the Ohio River basin states region study; (b) continuing the study of the Hawaiian Islands; (c) initiating the New England/N.Y. region study. NWS will remain capability to do site specific work for PMP analyses for Corps projects throughout the United States. The Corps will continue to support NWS' effort to build computer capability for automated processing of storm data, in order to shorten the time of analysis and reduce cost.

COORDINATION:

This program is fully coordinated with the National Weather Service, Office of Hydrology. For the precipitation-frequency study of the Ohio River basin region, the Corps assisted the NWS obtain significant cost-sharing from the states in the region and will attempt to do the same for the New England states region.

APPROPRIATION TITLE: General Investigations, FY 2002

2. Collection and Study of Basic Data

c. Other Programs

(3) International Waters Studies

SCOPE:

The Boundary Waters Treaty of 1909, the Niagara River Treaty of 1950, the Columbia River Treaty of 1961, and other less formal agreements between the Governments of the United States and Canada are concerned with the regulation, control, and use of boundary waters. Under the Boundary Waters Treaty of 1909, the International Joint Commission (IJC) was established and empowered to establish local boards, which conduct investigations and assure adherence to orders of approval pertaining to use of boundary waters issued by the Commission. Corps of Engineers representatives serve on and chair the U.S. Sections of the following IJC Boards: Saint Croix River, Champlain-Richelieu, Lake Champlain, St. Lawrence River, Niagara, Lake Superior, Lake of the Woods, Rainy Lake, Souris-Red Rivers Engineering, Souris River Control, Kootenay Lake, and Osoyoos Lake. Under separate treaties, Corps representatives serve on and chair the U.S. Sections of the Columbia River Treaty Permanent Engineering Board, the Columbia River Treaty Entities, the International Niagara Committee, and the International Lake Memphremagog Board. These Boards and Committees hold joint meetings, review report drafts and correspondence, make field inspections, obtain, collect, and analyze hydrologic and hydraulic data, and report their findings to the establishing parties. The degree of study activity varies depending upon the requirements of the Commission or Treaty under which they were established. These efforts assure better control, use, and orderly development of the jointly controlled water resources, and are of importance in attempting to meet water demands resulting from an expanding economy along the United States-Canadian border. Studies are closely related to the Corps of Engineers' Civil Works program and are summarized in the Assistant Secretary of the Army for Civil Works' Annual Report.

SUMMARIZED FINANCIAL DATA:

Estimated Five-Year (FY 2001-05) Program Cost	$2,500,000
Tentative Allocation for FY 2002	500,000
Balance to Complete Five-Year Program after FY 2002	2,000,000
Allocation for FY 2001	500,000
Change in FY 2002 from FY 2001	0
Average Annual allocations for FY 1996-2000	482,000

JUSTIFICATION:

The amount requested for FY 2002 will fund Corps of Engineers participation in assisting the U.S. Government meet its obligations under provisions of boundary water treaties and other international agreements between the United States and Canada. CELRD provides support for implementation of the Niagara Treaty of 1950 that governs the split of Niagara River Waters between the U. S. and Canada, and between the uses of the waters.

APPROPRIATION TITLE: General Investigations, FY 2002

2. Collection and Study of Basic Data

c. Other Programs

(3) International Waters Studies (Continued)

Northwestern Division engages in activities associated with implementation of the Columbia River Treaty and the Kootenay Lake and Osoyoos Lake Boards of Control. CENWD, together with Bonneville Power Administration and British Columbia Hydro annually develop the Assured Operating Plan and the Detailed Operating Plan for the treaty storage projects. Funds also are used to support the work of the Columbia River Treaty Permanent Engineering Board, including publication of its annual report to the Governments. North Atlantic Division is engaged in support of the Saint Croix River Board of Control and the Gulf of Maine Council on the Marine Environment. Work in the Saint Croix R. Basin involves retrieval and analysis of water data to assure compliance with IJC rules and annual inspection of dams and fish passage facilities.

ACCOMPLISHMENTS:

The Corps Division and District commanders and their staffs met all of their many and diverse responsibilities in representing the United States on the previously listed IJC Boards of Control and Treaty entities, boards and committees. The IJC-sponsored special flood damage reduction study of the Red River Basin was closed without completing the full scope of the planned work because of lack of funds from the United States. CENWD completed the Libby Coordination Agreement, and implemented all Columbia River Treaty required Assured Operating Plans (AOP) and Determinations of Downstream Power Benefits (DDPB).

FISCAL YEAR 2002:

The Corps will continue to carry out its multiple responsibilities to the various IJC Boards of Control and to the several Treaty entities, boards and committees. During FY 2002, additional flow data will be obtained and used to update the rating curve used to verify compliance with Niagara Treaty requirements. In addition, pursuant to the October 1999 Plan of Study for Lake Ontario regulation improvements, the IJC established the Lake Ontario-St. Lawrence River Study Board. Investigations are continuing as the second year of a 5-year effort. A Plan of Study for evaluating the Lake Superior regulation criteria outflows will be developed, and, if approved by Governments, studies may commence in FY 2002. A basin-wide hydrologic and regulation model will be implemented. Special studies related to international impacts of evaluation of endangered species compliance related to Columbia River Treaty projects will be continued by CENWD. CENAD will continue normal work in support of the Saint Croix Board of Control and the Gulf of Maine Council on the Marine Environment. Discussions are ongoing with the IJC on expansion of the IJC's mission to include environmental objectives, as described in the report entitled "The IJC and the 21st Century". The Corps will be supporting the IJC as it executes the reference from the governments regarding investigating the feasibility of establishing a demonstration watershed board and its implementation of the reference on diversion, consumption and transfer of international waters.

APPROPRIATION TITLE: General Investigations, FY 2002

2. Collection and Study of Basic Data

c. Other Programs

(4) Hydrologic Studies

SCOPE: The scope of activities under this item is determined annually based on the requests from USACE Commands and Laboratories to meet high-priority needs. These items are not covered under regular Civil Works GI and O&M funding programs. Major activities to be undertaken in the program generally include the collection of basic hydrologic data and the studies of these data for major storm events or certain special hydrologic processes. The information to be derived from this program will improve hydrologic engineering techniques for the planning, design, construction, and operation of water resources projects. The program consists of four sub-items: Storm Studies, General Hydrologic Studies, Sedimentation Studies, and Stream Flow and Rainfall Data.

SUMMARIZED FINANCIAL DATA:

Estimated Five-Year (FY 2002-2006) Program Cost	$ 4,000,000
Tentative Allocation Requested for FY 2002	500,000
Balance to Complete Five-Year Program after FY 2002	3,500,000
Allocation for FY 2001	500,000
Increase of FY 2002 from FY 2001	0
Average Annual Allocation for FY 1997-2001	491,200

JUSTIFICATION:

1. Storm Studies: The Storm Studies Program is a continuing investigation of major storms for the purpose of accumulating comprehensive rainfall data. These data are used to refine the regional hydrometeorological information throughout the nation. The up-to-date hydrometeorological information is essential for design of new projects as well as for safety assessment of existing projects. We have substantial need for hydrologic data for initiation and completion of water resources studies. These data are required in the evaluation of flood-producing potentials of river basins, and constitute the major portion of the basic data used in probable maximum precipitation determinations. Funds in the amount of $137,000 will be required in FY 2002 to work on several storm studies. Studies of storms occurred on July 1991 west of St. Louis County, River des Teres, MO; July 1990 at eastern NE and western IA; June 1991 at Elkhorn River Basin, NE and storm study of the Jan 1982 event in San Francisco Bay area will be continued. During 1997, wide-spread floodings occurred across the nation. Therefore storm studies are also planned for the 1997 events occurred over the San Joaquin, CA and the Red River of the North (SD & ND) basins

APPROPRIATION TITLE: General Investigations, FY 2002

2. Collection and Study of Basic Data

c. Other Programs

(4) Hydrologic Studies (Continued)

2. General Hydrologic Studies: Studies under this sub-item include needed improvement in the analysis of rainfall-runoff relationships, flood frequency, snowmelt studies, hydrograph development and routing at selected watersheds, model calibrations in urban areas, analyses of past floods, methods for the hydraulic analysis of non-gaged streams, and other studies of related hydrologic nature. Studies of new techniques to improve the accuracy of hydrologic modeling require additional resources. New radar applications in rainfall-runoff forecast is an immediate concern. Funds in the amount of $145,000 in FY 2002 will be required to continue this sub-item at a level to insure proper and orderly progress. In New England region, a continuing comprehensive hydrologic analysis of 1987 flood event will provide resource data for future potential planning and design studies, as well as reservoir operation. An effort which began in FY 1985 on re-examination of water yield and potential reallocation of storage space in Corps reservoirs is continuing. A study on rainfall induced by Hurricane Floyd during September 1999 over the Neuse and Tar basins in North Carolina will begin in Fy 2002.

3. Sedimentation Studies: The program is a continuing effort in which funds are used for conducting non-project sedimentation studies, and for the Corps share of an interagency sediment investigation program. The sedimentation studies include: promoting and supporting the standardization and development of equipment, criteria and methodology for the collection, analysis of suspended and bedload sediment characteristics of natural streams; and laboratory studies. The Hydraulics Laboratory, Waterways Experiment Station is sponsored by the Federal Interagency Sedimentation Committee (members from 18 agencies) and constitutes the major work effort under this sub-item. Funds in the amount of $77,000 in FY 2002 will be required to support the Federal Interagency Sedimentation Project (FSIP) located at the Waterways Experiment Station.

4. Streamflow and Rainfall Data: This is a continuing program in which funds are used for installation and operation of hydrometeorology gages of non-project nature that are needed by the Corps in addition to the stations in the cooperative programs conducted by the U.S. Geological Survey and the National Weather Service for the Corps. Funds are needed to continue support for the basic data collection in the Sleepers River Watershed in Vermont. Additionally, gages are needed to observe historical high water marks for validation of hydrologic models. An amount of $49,000 in FY 2001 is required to continue the establishment and operation of these special-purpose gages, and to determine historical flooding in urban sites.

APPROPRIATION TITLE: General Investigations, FY 2002

2. Collection and Study of Basic Data

c. Other Programs

(4) Hydrologic Studies (Continued)

ACCOMPLISHMENTS:

1. Storm Studies: This continuing program was organized in 1939 for the purpose of investigating rainfall from major storms of record throughout the entire United States. The selected storms are analyzed for frequency, associated runoff and precipitation data. These efforts are coordinated with the National Weather Services (NWS) Hydrometeorological Branch and the resulting data from these studies are used in design of water resources project throughout the country. During the period, Corps offices have gathered data on other major storms, reviewed the scope and interim results of ongoing studies by NWS on development of standard project and probable maximum storms at various basins throughout the United States and territories. Storm studies are being utilized in probable maximum precipitation studies in coordination with NWS for northwest, California and southwest United States.

2. General Hydrologic Studies: Examples of some of the more important studies accomplished under this program are: determination of rainfall-runoff relationship in urban areas; general hydraulic model calibration; snow cover surveys; and adaptation of hydrologic programs to CADD equipment. Work continued on the regional frequency studies for three major river basins in the North Central States. The long-term foothill streams of Colorado flash flooding project progressed as scheduled. Particularly encouraging to date are the data developed for rainfall-runoff on small watersheds and evaluation of flood potential in connection with design of structure located in the flood basin. Works continue on the water yield study.

3. Sedimentation Studies: All of the funds allotted to this sub-item is to assist in financing the Corps share of the cooperative Interagency Sedimentation Project at the Hydraulics Laboratory, Waterways Experiment Station.

4. Streamflow and Rainfall Data: Stations funded under this sub-item are generally established and operated several years prior to anticipated authorization for project-type activities, in order to provide a background of observed data on which to base the planning and design of projects. Progress continues at these gage sites to collect hydrometeorological data in flood prone areas to document historical flood and calibration of hydrologic models.

APPROPRIATION TITLE: General Investigations, FY 2002

2. Collection and Study of Basic Data

c. Other Programs

(4) Hydrologic Studies (Continued)

FISCAL YEAR 2001: The appropriation requested for FY 2002 is required to continue the Hydrologic Studies Program at the level required to meet high-priority needs.

ITEMS	FY 2001	FY2002
1. Storm Studies	$ 180,000	$ 137,000
2. General Hydrologic Studies	175,000	145,000
3. Sedimentation Studies	80,000	77,000
4. Streamflow and Rainfall Data	65,000	49,000
TOTAL	$ 500,000	500,000

COORDINATION: The storm studies are prepared by USACE commands and are reviewed by the National Weather Services in the preparation of probable maximum precipitation estimates for the Corps. The Interagency Sedimentation Project is conducted cooperatively, and jointly funded, by eight Federal agencies. Information concerning streamflow and rainfall data collection by the Corps under this activity is made available to the U.S. Geological Survey and the National Weather Service.

APPROPRIATION TITLE: General Investigations, FY 2002

2. Collection and Study of Basic Data

c. Other Programs

(5) Scientific and Technical Information Centers

SCOPE:

Five information analysis centers (soil mechanics, concrete technology, coastal engineering, hydraulic engineering, and cold regions engineering) located at the U. S. Army Engineer Research and Development Center's Geotechnical and Structures Laboratory, Coastal and Hydraulics Laboratory, and Cold Regions Research and Engineering Laboratory, respectively, provide the major interface between the Corps of Engineers and the public and private sectors to gather and disseminate information as required by PL 99-802, Federal Technology Transfer Act of 1986. The function of each center is to acquire, examine, evaluate, summarize, and disseminate newly published scientific and technical information generated within the Corp of Engineers and other activities in the U.S. and abroad.

SUMMARIZED FINANCIAL DATA:

Estimated Five-Year (FY 2002-2006) Program Cost	$ 600,000
Allocation Requested for FY 2002	100,000
Balance to Complete Five-Year Program After FY 2002	500,000
Allocation for FY 2001	76,000
Increase of FY 2002 from FY 2001	24,000

JUSTIFICATION:

Public Law 99-802, Federal Technology Transfer Act of 1986, requires technology transfer from Federal agencies to the private sector. In addition, both the Department of Defense and the Department of the Army have objectives of supporting the information needs of engineers and scientists and eliminating unnecessary duplication of R&D. The specified information centers, supported by their host laboratories, critically evaluate and summarize the technical validity and merits of published and unpublished research and technical publications on design, construction, or other technology utilization. User communities have been well established and distribution lists for technology transfer are continuously updated. Electronic media including the World Wide Web are used where appropriate. The effectiveness of activities and services is evaluated on a continuing basis, and technology transfer products and methodology are revised when appropriate.

APPROPRIATION TITLE: General Investigations, FY 2002

2. Collection and Study of Basic Data

c. Other Programs

(5) Scientific and Technical Information Centers (Continued)

ACCOMPLISHMENTS IN FY 2001:

The Corps of Engineers has moved onto the information highway and is making major use of the World Wide Web (WWW) for technology transfer. The WWW is widely accessible by both the public and private sectors and provides rapid transfer, at significant cost savings, of technical data, bulletins, general information on ongoing studies, technical notes, and ultimately technical reports. The information centers and their host laboratories are now maintaining WWW homepages with links to other related homepages. Recent establishment of internal networks, as well as a Corps-wide network, along with connection to the Internet, have provided a major leap forward in communications at a significant reduction in transmittal costs. Several thousand technical inquiries are received annually, with the Internet playing an increasingly major role. Inquiries are received from Federal, state, and local government activities, universities, private sector engineers and scientists, and concerned citizens.

Technical Field	Subjects
Coastal Engineering	Wave data and predictions, shore processes, inlet dynamics, navigation channels and structures, harbors, and coastal construction
Cold Regions Engineering	Ice engineering, meteorology, climatology, geophysics, geology, remote sensing, environmental engineering
Concrete Technology	Cements, concrete, aggregates, concrete construction, concrete repair and rehabilitation technology
Hydraulic Engineering	Hydraulic, hydrologic, water resources, and sedimentation of streams, rivers, waterways, reservoirs and natural impoundments; estuaries, inland and coastal groundwater; fishery systems; and hydraulic structures of all types

2. Collection and Study of Basic Data

c. Other Programs

(5) Scientific and Technical Information Centers (Continued)

Soil Mechanics	Embankment and foundation engineering, earthquake engineering, engineering geology and rock mechanics

Information Analysis Centers	FY 2002
Coastal Engineering	$ 20,000
Cold Regions Engineering	20,000
Concrete Technology	20,000
Hydraulic Engineering	20,000
Soil Mechanics	20,000
	$100,000

COORDINATION:

The Information Analysis Centers and their host Laboratories distribute reports, technical notes, computer programs, GIS data, abstracts, information bulletins, and other scientific and technical information to the Defense Technical Information Center (DTIC), Corps libraries, depository libraries, and identified user communities to ensure wide circulation and availability. WWW homepages are maintained on the Internet for public accessibility. Reports are also available for searching through the Corps Library Program's computer system LS/2000. DTIC publicizes reports through its own DOD database and forwards the reports to the National Technical Information Service (NTIS), Department of Commerce. NTIS places reports into a compendia of Selected Water Resources Abstracts and an annual cumulative edition, with conveniently indexed and cross referenced identification of what is being or has been done in water resources research and related scientific and engineering fields by whom, where, and when.

2. Collection and Study of Basic Data

c. Other Programs

(6) Coastal Field Data Collection

SCOPE:

The nationwide program is designed to systematically measure, analyze and assemble information required to accomplish the Corps mission in coastal navigation, storm damage reduction, and evaluation of harbor entrance impacts on adjacent shores. The data directly support project comprehensive regional and local planning, research, design, construction, operation, and maintenance. Cost-effective mission accomplishment requires long-term and systems/regional data that encompasses winds, waves, currents, water levels, and bottom configuration, sediment characteristics, and geomorphologic data. In particular, wave data are the key design parameter for coastal projects. For example, a 20% error in wave height leads to over a 70% difference in stone size for navigation structures. If the error in wave height leads to over specifying stone size, the construction costs are much higher than necessary. If stone size is too small, structures fail or have unnecessary life-cycle repair costs. With 800 navigation projects to maintain and repair (25% are more than 50-years old), cost attributable to having no data or poor data would be significant. These data are either unavailable in existing archives, are of uncertain or poor quality, or are too sparsely distributed temporally and/or spatially to have statistical value. The required data are regional in nature and not properly chargeable to authorized projects. Sufficient time is not available prior to or during project preauthorization planning studies to accumulate the years of base-line data necessary for adequate assessment of technical, economic, and environmental feasibility. Acquisition of the information will be accomplished through the concurrent accumulation of complementary items, each of which is unique and contributes certain critically needed data. The program is organized into five sub-items: (1) Wave Information Studies; (2) Wave Gauging; (3) Topographic and Bathymetric Nearshore Data; (4) Field Research Facility Measurements; and (5) Information and Program Management.

SUMMARIZED FINANCIAL DATA:

Estimated Five Year (FY 2002-2006) Program Cost	$13,000,000
Allocation Requested for FY 2002	2,200,000
Balance to Complete Five-Year Program after FY 2002	13,000,000
Allocation for FY 2001	2,200,000
Increase (Decrease) of FY 2002 from FY 2001	0
Average Annual Allocation for FY 1996-2001	$1,611,000

APPROPRIATION TITLE: General Investigations, FY 2002

2. Collection and Study of Basic Data

c. Other Programs

(6) Coastal Field Data Collection (Continued)

JUSTIFICATION:

1. Wave Information Studies. Numerical simulation techniques are used to estimate wave environments, including direction, from weather information in areas where adequate data are not available. Most wave gage data are non-directional; hindcast data provides 30-40 years directional wave statistics. This information is paramount to the functional/structural design and economic evaluation of coastal navigation projects. Additionally, detailed wind information is produced. These data are made available to Corps of Engineers Districts (in addition to reports) through a computerized coastal engineering data retrieval system, from which most statistical representations desired of waves and water levels can be obtained. Funding required is $350,000.

2. Wave Gauging. High-quality wave data are needed to predict harbor shoaling, harbor oscillation, jetty stabilization, etc. These data are imperative for operational guidance of dredging, navigation, maintenance, etc. Upon acquisition, these data are analyzed and made available to Corps engineers, planners, and managers via the Internet. These efforts are coordinated with the National Oceanic and Atmospheric Administration (NOAA), the Federal Emergency Management Administration (FEMA), and the data are made available to NOAA and the public. Cooperative agreements for the collection of wave data have been executed with the states of California, Alaska, Florida, Hawaii, Washington, Texas, and Virginia. These agreements provide a mechanism for other Federal, state, and local agencies to cooperate in the collection of coastal data. Funds in the amount of $800,000 will be needed to continue cooperative wave gauging with States and to operate and maintain wave gauging networks on a limited portion of the U.S. coasts.

3. Topographic and Bathymetric Nearshore Data. An historical record of past episodic events provides the necessary basis for predicting the results of future occurrences. The objective of this effort is to provide the quantity and quality of timely data required to more accurately document characteristics and effects of episodic coastal events such as extratropical storms, hurricanes, tsunamis, etc. Measurements of storm-induced beach, dune, and nearshore bottom changes are necessary to quantify erosion and storm effects on navigation projects. Storm shoaled channels will limit vessel access and changed bathymetry will change the wave climate at the entrance channel affecting the extent of pitch, roll, and heave a ship will experience. Nearshore berm disposal areas are also significantly affected by large episodic storm events. Funds in the amount of $40,000 are needed to support data collection in this area.

2. Collection and Study of Basic Data

c. Other Programs

(6) Coastal Field Data Collection (Continued)

4. Field Research Facility Measurements. Critical to measuring, analyzing and providing useful coastal data products for the CE Districts is the collection of intensive, long-term, high-resolution data for improving project design and reducing costs. The Field Research Facility at Duck, North Carolina is a unique real-world experimental facility that incorporates high-resolution instruments with comprehensive suites of environmental sensors to provide wave, current, meteorological, bathymetric, and topographic data. The facility is used to evaluate wave measurement techniques and equipment, test experimental oceanographic instrumentation and sensors, collect high-resolution continual data throughout major storms, conduct large interagency field experiments, such as SandyDuck and Duck94, and collect spatially and temporally intensive long-term base measurements required to understand complex coastal processes. These data are made available via an interactive website to engineers and scientists in the Corps, DOD Laboratories, other agencies, universities, and the private sector for researching coastal processes and for developing and verifying numerical models and coastal engineering tools that predict wave environments and sediment movement affecting coastal projects, navigation safety, dredging quantities and project impacts. They also are crucial for evaluating the characteristic of data products produced by sub-items (1) - (3) and improving their quality and completeness. Funds in the amount of $1,000,000 are required for the base measurement program at the Field Research Facility.

5. Information and Program Management. This task objective is to make coastal data readily available to Corps Districts and Divisions. A standardized database has been developed so that coastal data formats and analysis procedures are compatible throughout the Corps of Engineers. The value of program data and project-related data is maximized through the use of Corps-wide standards, routine updating of available data, utilization of a centralized data library on the World Wide Web and dissemination over the Internet. Principal forms of output are information reports, data resource reports, and computer-based data files. The standardized procedures will help avoid intra-agency duplication, minimize data collection efforts, and identify data deficiencies. Minimum maintenance effort will require $10,000.

APPROPRIATION TITLE: General Investigations, FY 2002

2. Collection and Study of Basic Data

c. Other Programs

(6) Coastal Field Data Collection (Continued)

ACCOMPLISHMENTS:

The wave information study has resulted in about 40 years of simulated directional wave data for the Atlantic and Pacific coasts and 30 years for the Gulf coast and the U.S. shores of the Great Lakes. Thirty years of wind data for the three coasts have also been produced. Computer models are used each year to add the current year of wind and wave information for all coastlines. Automated wave hindcasts/prediction systems have been developed for Lake Michigan, Atlantic and Pacific Coasts. This information provides the Corps with near real-time data for project use and increases the statistical validity of the database. Nearshore bathymetric data for the U.S. coastlines have been incorporated in the database. A data assimilation technique was developed to improve computer model calculations through statistical incorporation of measured data. The database of measured water levels along the Atlantic and Gulf of Mexico coastlines due to storms was updated through 1995. Joint efforts have been established with the States of California, Texas, Alaska, Florida, Washington, Oregon and Virginia for collection of wave data. Wave data have been acquired from program gages, numerous specific project stations, and from other agencies. Data standards have been implemented for data collection, analysis and quality assurance. Simulated and measured wave, water level and bathymetric data are available through an interactive website on the Internet.

PROGRAM ITEM	FY 2001	FY 2002
1. Wave Information	350,000	350,000
2. Wave Gauging	800,000	800,000
3. Topographic and Bathymetric Nearshore Data	0	40,000
4. Field Research Facility	1,000,000	1,000,000
5. Information Management	10,000	10,000
	$2,200,000	$2,200,000

APPROPRIATIONS TITLE: General Investigations, FY 2002

2. COLLECTION AND STUDY OF BASIC DATA

C. Other Programs (Continued)

(7) Transportation Systems

SCOPE: The Transportation Systems Program supports Corps districts and Headquarters personnel in accomplishing their navigation project planning and evaluation responsibilities through the provision of integral information components. The process of planning improvements to waterway and harbor navigation projects necessitates the consideration of the needs, opportunities, benefits, and costs associated with project improvements within the context of the project specific area as well as within the context of the overall national transportation system. The transportation systems program is managed by CECW-P and is a continuous, on-going effort to ensure the development of state of the art analytical techniques, tools and methods; the development of deep draft and shallow draft vessel operating and replacement cost data which can be applied by District offices; the provision of timely updates of the world deep draft vessel fleet, commodity, and cargo flow forecasts; the publication of reports documenting the results of research associated with the Transportation System Analysis program; and the provision of technical services and support to District offices and Headquarters personnel. The goals of the Transportation System Program are as follows: (1) to improve the technical quality and accuracy of navigation planning studies as well as provide for consistency in analytical procedures across the wide array of planning conditions encountered by District personnel; (2) to improve the strategic planning of navigation systems improvements; and (3) to reduce the cost of planning and operation of the navigation system. These goals are accomplished by providing District and headquarters analysts with useful and consistent information and analytical tools and procedures, and result in a end product which reflects a responsible and worthwhile investment of government funds.

SUMMARIZED FINANCIAL DATA:

Estimated Five-Year (FY 2001-05) Program Cost	$ 4,800,000
Tentative Allocation for FY 2002	$ 700,000
Balance to Complete Five-Year Program after FY 2002	$ 3,400,000
Allocation for FY 2001	$ 700,000
Increase in FY 2002 from FY 2001	$ 0

APPROPRIATIONS TITLE: General Investigations, FY 2002

2. COLLECTION AND STUDY OF BASIC DATA

C. Other Programs

(7) Transportation Systems (Continued)

JUSTIFICATION: The $700,000 requested in FY 2002 for Transportation Systems would be used to update models and analysis used for the planning and evaluation of ports, harbors and inland waterways, and the modernization of planning methods and associated computer models to support District navigation studies nationwide. Specifically, $100,000 would be used to continue to develop and provide inland and ocean vessel operating costs used to estimate transportation cost reduction benefits for Corps navigation studies; $125,000 would be used to continue to develop and provide commodity and fleet forecasts of waterborne traffic for deep and shallow draft navigation projects from industry forecasting experts, and to update deep draft vessel characteristics for use by Corps field planners. In-house experts will develop Corps-specific analysis and forecast summaries; $50,000 would be used to provide rail, barge and truck models for use in estimating origin-destination transportation cost savings by Corps Districts; $90,000 to update the *Grain Transportation Cost Model* to apply to evaluation of trade- policy changes to the flow of U.S. agricultural products world-wide; $75,000 would be used to develop a standardized, cost efficient desktop model to evaluate the benefits of navigation projects; $60,000 will be used to coordinate the navigation research priorities with the Transportation Research Board; $40,000 will be used to continue development of the HARBORSYM and NAVSYM models; $50,000 will be used to provide consulting technical support services to Corps District offices; $75,000 will be used to develop procedures for performing multiple port analyses to evaluate the trade-offs between development at competing ports within a given market area; $35,000 would be used to develop a tidal-delay model that would standardize the procedures, thus minimizing the effort and cost for each study needing to evaluate this component.

ACCOMPLISHMENTS:

1. Developed, field-tested, and systematically updated systems analysis models and supporting databases, to improve project-planning efficiency.

2. Developed and released the first set of Cruise Ship Vessel Operating Costs.

APPROPRIATIONS TITLE: General Investigations, FY 2002

2. COLLECTION AND STUDY OF BASIC DATA

C. Other Programs

(7) Transportation Systems (Continued)

ACCOMPLISHMENTS (Continued):

3. Initiated effort to update NAVSYM Model to include results from field data

4. Initiated development of HARBORSYM Model Design Document. Model will enable Corps staff to efficiently evaluate changes in queuing in harbors as part of the transportation cost savings analysis.

5. Developed a comprehensive electronic compilation of deep draft vessel characteristics for the world-fleet that integrated ship data from Lloyds, Clarkson's and Fairplay sources for use by Corps District planners.

6. Updated the PC-compatible barge, rail and truck transportation cost models and have initiated a process by which future annual updates of the models are automatically available to Corps District offices.

7. Continued to update the regional commodity excess demand and supply relationships of the *Grain Transportation Systems Cost Model* in cooperation with Corps District offices and the Department of Agriculture.

8. Developed a White Paper on Inventory Costs to be used in future evaluation of Corps' Navigation Methods.

9. Completed the development and User's Manual for the Multi-Variate Regional input/output model.

10. Completed modification to Deep Draft VOC model to allow for more accurate bunker fuel cost estimates for use in transportation cost savings evaluations.

11. Completed analysis determining appropriateness and usability of elasticity in navigation systems analysis.

12. Completed research and development of methods for evaluating air emissions impacts in conjunction with navigation systems analysis.

APPROPRIATIONS TITLE: General Investigations, FY 2002

2. Collection and Study of Basic Data

c. Other Programs

(8) Environmental Data Studies

SCOPE: The Environmental Data Studies program includes general, national or regional environmental data collection; development and management of an internet accessible Environmental Database System; statistical environmental data summaries of regional or national scope; support of field offices in the use of innovative information system technology, including geographic information systems and remote sensing technology to demonstrate the relationship between project-funded environmental activities with national or regional environmental issues; support for attendance to environmental meetings and symposia, where COE presence is required; and the synthesis and dissemination of key emerging environmental issues such as global change and sustainable development within the Corps; the development of analytical models to structure and adapt programmatic or specific environmental data files to the conceptual needs of engineering and\or planning objectives for economies of cost and time, including regional environmental assessment activities related to floods, droughts or climate change and variability and the development of information on the overall environmental program performance of the Corps of Engineers. Environmental data includes biological, physical, and\or cultural resource components, several of which have requirements for periodic reporting on a national basis, some of which are responsive to the needs of international treaties and\or obligations, and some of which are important to understanding the accomplishments of the Corps emerging environmental program. The exchange of data is both intra- and interagency, involving all concerned Federal agencies, notably the Bureau of Reclamation, the Bureau of Land Management, the Fish and Wildlife Service, the Soil Conservation Service, the Forest Service, the National Marine Fisheries Service, the Environmental Protection Agency, the National Ocean Survey, the National Weather Service and Geological Survey. Coordination with State Offices and with independent offices such as the Advisory Council for Historic Preservation, OSTP, NSF, NIST and NRC is also accomplished for issues of concern to the Corps.

SUMMARIZED FINANCIAL DATA:

Estimated Five-Year (FY 2002-2006) Program Cost	$500,000
Tentative Allocation for FY 2002	100,000
Balance to Complete Five-Year Program after FY 2000	400,000
Allocation for FY 2001	77,000
Decrease in FY 2001 versus FY 2000	23,000

APPROPRIATIONS TITLE: General Investigations, FY 2002

2. Collection and Study of Basic Data

c. Other Programs

(8) Environmental Data Studies (Continued)

JUSTIFICATION: Funds in the amount of $100,00 are requested to continue the Environmental Data Studies Program and to improve environmental program management performance. Funds will be used to continue development of an Internet accessible Environmental Database System, to support collection and sharing of environmental information for national and regional inventories and assessments and train field personnel in its access and use. We will begin development of a prototype environmental trend analyzer; coordinate our performance measurement and data cataloguing efforts with related environmental policy studies and GPRA according to work plans developed in FY 2001.

ACCOMPLISHMENTS FOR FISCAL YEAR 2000:

1. Developed a working prototype of the Environmental Database System (EDS). Using only an internet browser such as Netscape, EDS-Atlas allows researchers to develop performance statistics for selected states, Corps offices or other geographic areas, as well as for each of the major Corps environmental programs (Section 1103, 1135, 204, etc.). EDS-Encyclopedia, accessible through the same address is a research tool for those engaged in environmental studies. EDS-Encyclopedia provides ratings for the quality and ease of use of each linked site. It also provides "deep" links directly to data sources, rather than the more commonplace links to agency homepages that require considerable additional search time.

ACCOMPLISHMENTS FOR FISCAL YEAR 2001:

1. Update data for Corps projects that are already in the EDS but have proceeded to another stage.
2. Design a strategy to track the Corps mitigation for environmental impacts from Corps projects.
3. Design and initiate efforts to support environmental reporting per GPRA.
4. Lessons learned report on IWR review of Environmental reports for performance data.

APPROPRIATION TITLE: General Investigations, FY 2001

2. Collection and Study of Basic Data

c. Other Programs

(9) Remote Sensing Systems Support

This item supports the overall technology transfer requirement of the Corps Civil Works Program for Remote Sensing systems, which is the responsibility of the Cold Regions Research and Engineering Laboratory (CRREL) through its Remote Sensing/Geographic Information Systems (GIS) Center of Expertise.

SUMMARIZED FINANCIAL DATA	
Estimated Five-Year (FY2002-2006) Program Cost	$1,500,000
Appropriation Requested for FY 2002	$300,000
Balance to Complete Five-Year Program after FY2002	$1,200,000
Appropriation for FY 2001	$300,000
Increase of FY 2002 from FY 2001	0

JUSTIFICATION:

The Remote Sensing/GIS Center is the Corps' Center of Expertise for Civil Works Remote Sensing and GIS technologies. Through centralized management of this function, the Center provides cost-effective technology transfer and applications development in support of Corps mission responsibilities in all business practice areas: navigation, flood and coastal storm damage reduction, hydropower, regulatory, environment, emergency management, recreation, water supply, and work for others. Continuing interaction with other researchers and practitioners throughout the Corps, government, the private sector, and academia assures knowledge of evolving trends that are important for the Corps and that duplication of effort is avoided.

APPROPRIATION TITLE: General Investigations, FY 2001

2. Collection and Study of Basic Data

c. Other Programs

(9) Remote Sensing Systems Support (Continued)

Declines in manpower require working smarter, better, and faster. Contributing to this effort, the Center develops approaches for the integration of data from the disparate sources necessary for regional sediment management, water control, land and water resource management, support to emergency management, and compliance with the attendant environmental regulations and related policies. The Center maintains cognizance of state-of-the-art sensors, data collection, analysis, and storage systems, commercial software, and bridging software that integrates these and operational technologies into the Corps divisions, districts, and other agencies' activities. Technology is transferred through telephone and short no cost assistance to the field. The existence of the Center ensures that the necessary support can be rapidly directed toward solving operational problems that require specialized expertise. The PROSPECT training program in remote sensing and GIS, managed by Center staff, provides another avenue for the transfer of knowledge to those who are, or soon will be, using these technologies. Training also is conducted in the field, through workshops and conferences. White papers, pilot projects, Corps and other publications, including Engineering Letters, Circulars, and Manuals, and the Internet, also are used to transfer procedures and lessons learned to end users.

ACCOMPLISHMENTS IN FY 2001:

1. Served as key resource and technology point of contact for the Corps of Engineers for Civil Works remote sensing and GIS.

2. Acquired and distributed enterprise geospatial data to all Corps entities. With HQUSACE, evaluated Corps geospatial data requirements.

3. Continued technology transfer through training courses, briefings, technical papers, technical demonstrations, pilot programs, and conferences.

4. Worked with Northwest Division and Districts to develop a prototype regional corporate GIS.

5. Developed national geospatial data viewers for Corps programs.

6. Initiated development of PROSPECT image processing course.

7. Provided technical support to Corps District offices for the development of implementation plans for Geospatial data management including development of enterprise geospatial data approaches.

APPROPRIATION TITLE: General Investigations, FY 2001

2. Collection and Study of Basic Data

c. Other Programs

(9) Remote Sensing Systems Support (Continued)

8. Supported one-stop service requests from Corps districts and divisions.

9. Developed and distributed national geospatial data coverages for emergency management and other Corps business practice applications.

10. Member of the CADD/GIS Technology Center's advisory support team.

11. Worked with Corps Districts, other federal and state agencies in support of the International Joint Commission's efforts on the Great Lakes study.

12. Participated in development of Future Operating Capabilities and a redefined strategic approach to Civil Works R&D

13. Sponsored and participated in program development of national and international remote sensing and GIS conferences.

14. Initiated a new version of the Corps' Remote Sensing Manual that includes high resolution satellites and hyperspectral and digital airborne systems.

15. Developed and transferred improved techniques for integration of snowmelt in water control.

16. Established and maintained website to support the transfer of technology from the Civil Geospatial R&D Program to the field.

17. Provided civil funds to the CCIO as needed to support identifying field imagery requirements.

APPROPRIATION TITLE: General Investigations, FY 2001

2. Collection and Study of Basic Data

c. Other Programs

(10) Automated Information Systems Support - The CADD/GIS Technology Center

SCOPE:

This effort provides technical support to planners, architects, engineers, and scientists utilizing CADD and GIS technologies in the planning, design, construction, operation and maintenance of Corps projects. However, as there is no way of calculating the benefits which individual projects receive from the CADD/GIS Center, the Corps does not propose to charge projects and programs for the Civil Works share of its maintenance costs.

In 1992, the former Army Corps of Engineers' Computer Aided Design and Drafting (CADD) Center, located in the Army Engineer Waterways Experiment Station (WES), was expanded to an Army, Navy, Air Force (Tri-Service) center, including the addition of Geographic Information Systems (GIS) technology, by a joint agreement between the Corps, the Naval Facilities Engineering Command, and the Air Force Civil Engineer. Its purpose was to reduce duplication of effort between the three services in the management of CADD/GIS technologies for facilities and environmental engineering. Since that time the Defense Logistics Agency (DLA), the General Services Administration (GSA), State Department, U.S. Marine Corps, U.S. Coast Guard, National Institute of Building Sciences, NASA, and FAA have joined this effort. As a result, this Center is a multi-agency vehicle to set standards, coordinate CADD/GIS systems uses, promote system integration, support centralized acquisition, and provide assistance for the installation, training, operation, and maintenance of CADD/GIS systems within the DoD facilities and environmental communities, including the Corps districts.

The success of the Center has earned them two Vice President's Hammer Awards for reinventing government and reducing costs. The Center has also received the ERDC Director's Award for Tech Transfer. All Corps districts use CADD, GIS and computer mapping systems in all phases of Corps projects, including planning, real estate, design, construction, operations, maintenance and readiness which benefit from these efforts. For FY 2001, the consolidated Army/Navy/Air Force funding portion was $2,411,000, the Civil Works portion was $650,000. Additional project funding included: $100,000 from the Air Force, $250,000 from the Navy, and $100,000 from the Marines, The $650,000 requested for FY 2002 for the Civil Works portion will support approximately 1,000 workstations and 2,000 users of CADD/GIS technologies for Civil Works Projects.

SUMMARIZED FINANCIAL DATA:

Estimated Five-Year (FY 2002-2006) Program Cost	$3,250,000
Tentative Allocation for FY 2002	650,000
Balance to Complete Five-Year Program after FY 2002	2,600,000
Allocation for FY 2002	650,000
Increase in FY 2002 above FY 2001	0
Average Annual Allocation for FY 1997-2002	$ 640,000

APPROPRIATION TITLE: General Investigations, FY 2001

2. Collection and Study of Basic Data

c. Other Programs

(10) Automated Information Systems Support - The CADD/GIS Technology Center (Continued)

JUSTIFICATION:

All Corps districts use CADD, GIS, FM, and computer mapping systems. Practically all engineering drafting tables have been replaced with CADD platforms or computer mapping systems and most planning, environmental, and natural resource analysis are being performed on GIS platforms. The geospatial data standard efforts of the Center are being coordinated with the Federal Geographic Data Committee to develop a National GIS Standard and to have civil works features accepted into the Defense Data Dictionary System (DDDS). The Center's GIS standard is currently under review as a ANSI standard. Data standards which are developed by the Center are used for both in-house and contractor produced drawings, maps, and analyses which assures that all Corps offices have the ability to exchange their work among themselves and with others, including the private sector. The Center is actively coordinating its CADD standards with the National Institute of Building Sciences to create the recent U.S. National CAD Standard, thus reducing the redundancy with the private sector and reducing cost for both government and the private sector. The Center ensures that the Corps obtains the maximum return on its investment in CADD and GIS by coordinating development efforts and distributing end products to Corps offices. The CADD and GIS systems at field offices can achieve maximum productivity when they take advantage of the economies of scale offered by sharing the development and use of common data standards, procedures, and applications. This sharing is accelerated through a concerted effort by the Center, working with various field working groups, to draw from field expertise and dissemination of this knowledge in the form of lessons learned and standards to benefit all Corps users. Comprehensive data standards supported by the Center permit government and industry users to produce equivalent designs, maps and analysis on a variety of computer systems using leading off-the-shelf CADD and GIS software.

ACCOMPLISHMENTS IN FY 2001:

1. The A/E/C CADD Standard Release 2.0 was completed and released. This release incorporated the latest updates from the National CAD Standard and implemented comments and feedback from field personnel on Release 1.9. The MicroStation-based workspace application for Release 2.0 was completed and distributed to the field for implementation. An AutoCAD version of the workspace was beta-tested and released for field review. Both applications were made available to the field via the Internet. The Center's Civil Works Field User Group completed its review of the standard and its comments were incorporated.

2. Collection and Study of Basic Data

c. Other Programs

(10) Automated Information Systems Support - The CADD/GIS Technology Center (Continued)

2. Release 3.1 of the CADD Details Library was distributed in both hardcopy and the internet. This release included inch-pound and metric versions of all details from Release 3.0.

3. The Electronic Bid Solicitation (EBS) continues to be one of the most visible Center projects. It has successfully been implemented at over 40 installations. Fifteen training courses have been presented to date with over 300 students attending. The process has been adopted by several government agencies including the Corps of Engineers, NAVFAC, Army National Guard, AFCEE, and Anheuser Busch. We have added additional functionality to the EBS Web site including automated posting of solicitation information to the Army Single Face to Industry (ASFI) web site. We are also adding the ability to post all solicitations to a central database located at the Center. A central database will allow contractors to search for all solicitations at one location. In 2001, the Center will also begin offering an EBS Web hosting service. This service allows installations to use the Center as an Internet Service Provider for EBS. Continued development of the GIS data standards for Civil Works activities, which provide a common format for the development of GIS on civil works projects, thereby cutting costs and allowing sharing of data sets among government agencies and the private sector. Developed and taught training courses on implementation and use of Release 2.0 of the Spatial Data Standards for facilities, infrastructure, and environment and the new Facility Management Standards for facilities, infrastructure, and environment.

4. Completed the alpha version of Release 2.00 of the Facility Management Standards for Facilities, Infrastructure, and Environment (FMSFIE). Among the most significant Release 2.00 accomplishments included: (1) Revision of the Communications Entity Set data model as recommended by field communications experts; (2) Incorporation of airfield related data elements from the Defense Information Systems Agency (DISA) Defense Data Repository System (DDRS) and National Imagery and Mapping Agency (NIMA); (3) Incorporation of the Environmental Protection Agency (EPA) Drinking Water Quality data requirements; and (4) Incorporation of Building Space Management data standards.

5. Enhanced the FY2000 web-based Civil/Site Virtual Center of Expertise (CSVCX) to provide Civil/Site Engineering Solutions and Resources for Civil Works related design problems and to provide links to experts from USACE District offices for additional help to designers. The web site was created at the Center, which provided Civil/Site Design Solutions and Resources for about 45 design problems.

6. Continued development of Library of CADD Designs and added projects to the library. The library grew to over 340 projects and was visited by over 4,000 different visitors. The library provides design information on past designs. Designers can take advantage of this information in the design of new projects.

7. Updated of the Survey Engineering and Monumentation Management System (SEMMS) web-based software application to distribute Civil Works-related Survey Control data from USACE District offices. This site contained both graphic and text only query capabilities. A web site was established so users can access information and locate experts in various civil design areas. Problems and questions can be posted for experts to review and solve.

APPROPRIATION TITLE: General Investigations, FY 2001

2. Collection and Study of Basic Data

c. Other Programs

(10) Automated Information Systems Support - The CADD/GIS Technology Center (Continued)

8. In FY01, several standard sets initiated by the Center went through the FGDC review process for adoption as a national standard. Noteworthy is the final approval for the Utilities Data Content Standard put forth by the FGDC Facilities Working Group. This standard specifically addresses the large-scale, intra-city applications such as engineering and life cycle maintenance of utility systems. Throughout the year, the Center staff and field users reviewed and made suggested changes in thematic FGDC Subcommittee standards for review. Specifically, USACE and Center field users had the opportunity to review the Digital Cartographic Standard for Geologic Map Symbolization as developed by the FGDC Geological Data Subcommittees. Deficiencies of geotechnical symbols and terms were identified in an agency-wide response to FGDC. Another pertinent standard, the FGDC Hydrographic Data Content Standard for Coastal and Inland Waterways, provide a consistent catalog of terms and definitions to ensure uniform interpretation within the hydrographic community. This standard supports USACE and DoD navigation and charting functions as well as different electronic GIS and CADD packages.

APPROPRIATION TITLE: General Investigations, FY 2001

2. Collection and Study of Basic Data

c. Other Programs

(11) Flood Damage Data Program

SCOPE: The Flood Damage Data Program is required to facilitate the collection and maintenance of basic flood damage data to support Corps field offices in accomplishment of flood damage reduction studies. Planning and evaluation of flood damage reduction projects requires knowledge of actual damages caused to various types of properties. The relationships between flood depth, flood duration and velocity, value and type of property, and the amount of damage are essential to making accurate and supportable estimates of the value of projects. The distributions of damages resulting from the various factors involved are needed for the risk analysis framework adopted for water resource studies. Damage data are obtained in rare instances when a damaging event occurs and funded studies are underway. However, in most instances when flooding occurs there are no current studies in the area or other funding mechanism to collect the requisite data to be used in future analysis or to report and accurately record the damages incurred and account for the effect of the factors which caused the damages. Previously no centralized flood damage data source existed which retrieved basic data for research efforts and for specific project studies. The major purpose of the program is to improve the technical quality and accuracy of flood damage data, to improve the understanding of the interrelationships of the characteristics of flooding on property damage, to improve the formulation of flood damage reduction projects, and reduce the costs of feasibility studies. The activities of the program are to: (1) conduct actual flood damage surveys immediately following flood events; (2) develop, maintain, and improve the economic database for flood damage reduction projects; (3) calculate flood depth-damage functions based on actual damage data; and (4) develop and maintain a floodplain inventory application that would be used to apply flood damage estimation models to feasibility, reconnaissance, and continuing authority studies.

APPROPRIATION TITLE: General Investigations, FY 2002

2. Collection and Study of Basic Data

c. Other Programs

(11) Flood Damage Data Program (Continued)

SUMMARIZED FINANCIAL DATA:

Estimated Five-Year (FY 2002-06) Program Costs	$2,800,000
Tentative allocation for FY 2002	$ 400,000
Balance to Complete Five-Year Program after FY 2001	$2,400,000
Allocation for FY 2001	$ 400,000
Increase of FY 2002 from FY 2001	$ 0
Average Annual Allocation for FY 1997 - 2001	$ 350,000

JUSTIFICATION: The $400,000 requested in FY 2002 for Flood Damage Data would be used to develop and maintain data collection survey forms and data collection techniques, to collect post-flood damage data, to employ the flood damage database to estimate a National model where regional or local flood characteristics can be specified to estimate flood damage relationships, to update and maintain a computer application for applying flood damage models to floodplain inventory data, and to develop generic business flood damage relationships. Specifically, $50,000 would be used to monitor data collection, $150,000 would be used to collect damage data for approximately three flood events, $125,000 would used to update, maintain and expand a computer application for estimating residential and commercial structure and content value and damage, and $75,000 would be used for data analysis and the development of generic damage relationships and for the further development of a floodplain inventory application to use these relationships.

ACCOMPLISHMENTS:

1. Flood damage surveys, using material from OMB-approved questionnaires have been developed, reviewed, and pre-tested.

2. Data collection techniques and data tabulation procedures have been developed.

3. Over 2,000 residential surveys and approximately 300 business surveys have been completed for properties in 15 flood-damaged areas. A database has been created from these surveys and analysis is continuing. A report has been issued with residential depth-damage functions computed from the case studies.

4. Generic business structure damage functions and vehicle damage functions have been computed and documented.

2. Collection and Study of Basic Data

c. Other Programs

(11) Flood Damage Data Program (Continued)

5. A research design report has been completed for further development of risk-based damage function calculation, using additional data from building industry component costs models and data collected as part of this program.

6. A residential depth-damage function application has been developed for Corps-wide use. The application will be used to determine the depth-damage relationships based on building characteristics and county-specific building costs. The model has incorporated structure and content estimation and structure and content damage for a comprehensive array of structure types, foundation types, exterior building material, quality, and period of construction. The model has been released to Corps districts for integration with the HEC-Flood Damage Analysis Package for evaluation of flood damage reduction benefits.

7. The floodplain application has been modified to include a facility for estimating commercial structure and content values.

8. A primer has been issued to help Corps personnel better consider subjective factors, such as effective age, quality, and condition when assessing the value of flood-prone residential property.

9. A review of potential methodologies and data sources for estimating flood damage to roads has been completed.

APPROPRIATION TITLE: General Investigation, FY 2002

3. Research and Development

The Corps must pursue an aggressive R&D effort to take advantage of rapidly developing technologies and techniques that offer the possibility of significant monetary savings and greater reliability, safety, and enhanced efficiency in planning, design, construction, operations and maintenance of civil works activities.

The Civil Works R&D program is formulated to directly support the established business programs and strategic directions of the Civil Works Program including: flood and coastal storm damage reduction, inland and coastal navigation, environment (including natural resources, compliance, mitigation, and restoration), water supply, hydropower, recreation, emergency management, and regulatory. The Civil Works R&D requirements are primarily user driven and the effort is essentially a problem-solving process by which the Corps systematically examines new ideas, approaches, and techniques, with a view toward improving the efficiency of its planning, design, construction, operations and maintenance activities. The request for $24,000,000 of General Investigations funds for the FY 2002 program would accomplish only the very highest priority R&D needs.

Results of this R&D effort are directly incorporated into practice within the Civil Works Program through the Civil Works Guidance Maintenance Program involving revisions or additions to Engineer Regulations, Engineer Manuals, Technical Guidance Manuals, Engineer Technical Letters, or Guide Specifications. Numerous other means of technology transfer are also used such as the training courses, workshops, and other professional contacts. The Corps Civil Works R&D Program continues to provide practical end products and a high return on investment for the Corps and the Nation.

COORDINATION:

The Corps manages and conducts Civil Works R&D through the U. S. Army Engineer Research and Development Center (USAERDC). The USAERDC consists of seven research laboratories:

Coastal and Hydraulics Laboratory, Vicksburg, MS
Cold Regions Research and Engineering Laboratory, Hanover, NH
Construction Engineering Research Laboratory, Champaign, IL
Environmental Laboratory, Vicksburg, MS
Geotechnical and Structures Laboratory, Vicksburg, MS
Information Technology Laboratory, Vicksburg, MS
Topographic Engineering Center, Alexandria VA.

Some elements of Civil Works R&D are also assigned to the Corps Institute for Water Resources (IWR) at Fort Belvoir, VA and to the Hydrologic Engineering Center (HEC) at Davis, CA.

APPROPRIATION TITLE: General Investigation, FY 2002

3. Research and Development (Continued)

In order to most effectively use the limited R&D resources and to avoid unnecessary duplication of research effort, the Civil Works R&D Program maintains aggressive external technical exchange and technology transfer programs with other Federal agencies including the TVA, Bureau of Reclamation, Bonneville Power Administration, Western Power Administration, the Soil Conservation Service, EPA, and the Fish and Wildlife Service. In addition, Corps researchers are in continuous close contact with NOAA, USGS, USCG, NASA, DOT, NIST, FHWA, NRC, the Navy, and state and local governments concerning Civil Works R&D activities.

Corps researchers also maintain continuing contact with the research activities of universities and industry through regular membership in such organizations as the American Society of Civil Engineers, the Civil Engineering Research Foundation, the American Concrete Institute, the American Society of Testing and Materials, the International Conference on Coastal Engineering, the American Association of Port Authorities, the Coastal Society, the Offshore Technology Conference, International Society of Soil Mechanics and Foundation Engineering, U.S. and International Committees on Large Dams, and the Permanent International Association of Navigation Congresses. The Corps also participates extensively with the Transportation Research Board, the Water Science and Technology Board, and the National Research Council in coordinating and leveraging research activities.

SUMMARIZED FINANCIAL DATA:

Estimated Five Year (FY 2002 - FY 2006) Program Cost	$221,500,000
Allocation Requested for FY 2002	24,000,000
Balance to Complete Five Year Program after FY 2002	197,500,000
Allocation for FY 2001	20,695,000
Increase of FY 2002 over FY 2001	3,305,000
Average Annual Allocation for FY 1997-FY 2001	24,908,000

CURRENT RESEARCH EFFORT**:**

The proposed FY 2002 R&D Program is structured to directly support the Civil Works business programs and the anticipated technological emphasis and requirements of the Civil Works Program. Strategic emphases of the R&D program include:

Ecosystem Management and Restoration
Innovative Design and Construction of Navigation Projects
Regional Sediment Management
High-Performance Materials and Systems
Innovative Flood Protection Technologies

3. Research and Development (Continued)

The Ecosystem Management and Restoration Research Program addresses the Corps environmental needs at the ecosystem/watershed level. The objective of this research effort is to design state-of-the-science, user-oriented methods and procedures to restore and manage natural resources with application toward the total ecosystem/watershed. Research is also focused on environmental restoration technologies for a wide range of water resources management needs. The focus of this research enables the Corps to meet the legal requirements of the National Environmental Policy Act (NEPA), the Water Resources Development Act, and the Endangered Species Act (ESA) and to accomplish high priority Administration's initiatives such as the Riverine Ecosystem Restoration and Flood Hazard Mitigation efforts and national wetlands restoration goals.

The innovative design and construction of navigation projects research will include studies to develop innovative construction methods such as float-in, lift-in, and underwater construction techniques for navigation projects. The results of these studies will provide the needed guidance for the implementation of innovative concepts that will result in rapid construction and modernization of navigation projects at a much reduced cost and with little or no impact to navigation during construction. Development of cost-reducing design and construction techniques will permit the construction and rehabilitation of more navigation projects with limited funds in the Inland Navigation Trust Fund and will reduce the potential for major disruptions in inland navigation and decrease operating costs to the inland navigation industry.

Improved sediment management at navigation and flood damage reduction projects offers tremendous potential for future project cost reduction. Research in this area is focused on sedimentation prediction and control techniques, optimizing channel depths and dimensions including more cost-effective deep-draft channel design criteria to safely and efficiently accommodate future international shipping requirements, reduced dredging costs, increased navigation channel safety and reliability, and increased options and opportunities for beneficial uses of dredged sediment.

The research on the high-performance materials and systems will evaluate and develop high-performance construction materials that will enable the Corps to construct more durable structures with significant reductions in project delivery times and construction costs. High-performance materials and systems will also be developed to reduce costs associated with operation, maintenance, and rehabilitation of existing structures. The results of this research will furnish the Corps with improved materials and technologies to ensure a continued high level of safety and reliability of Civil Works facilities and more economically design and construct Corps' civil works projects.

The innovative flood protection technologies research focuses on monitoring, evaluation, and flood fighting technologies for levees and related elements of the inland flood protection infrastructure. This research is directed toward identifying, developing, and fielding innovative flood protection technologies to cover larger areas of infrastructure more quickly and efficiently than existing conventional techniques.

3. Research and Development (Continued)

The Corps FY 2002 R&D Program is restructured to align R&D investments with strategic directions of the Corps and directly support civil works business programs. The FY 2002 R&D program includes six major research areas, as listed below:

Navigation Systems: Includes specific deep-draft (including Great Lakes) focused R&D programs on Harbor Entrances and Coastal Channels, Coastal Sedimentation and Dredging, Coastal Structure Evaluation and Design, Inland Navigation Hydraulics, specific research on Innovations for Navigation Projects that includes studies to develop new filling and emptying systems for locks, the use of alternative construction methods such as float-in, lift-in, and underwater construction techniques for navigation projects; and regional sediment management.

Flood and Coastal Protection: Includes specific R&D programs on Flood Damage Reduction and Stream Restoration, Hydrologic Engineering, Cold Regions Engineering, and Innovative Flood Protection technologies.

Environmental Technologies: Includes specific research on Watershed Assessment Technologies, Ecosystem Management and Restoration, and Long-Term Effects of Dredging Operations.

Infrastructure Engineering: Includes specific R&D programs on High-Performance Materials and Systems, Geotechnical Engineering, Concrete/Structural Engineering, Earthquake Engineering, and Risk Analysis for Dam Safety.

Geospatial Technologies: Includes specific research on Surveying and Mapping, Remote Sensing, and Geographic Information Systems (GIS) that support all Civil Works business programs.

Decision Support Technologies: Includes specific research on Decision Support Technologies for the Civil Works program and Risk Analysis for Water Resources Investments.

APPROPRIATION TITLE: General Investigations, FY 2002

3. Research and Development (Continued)

RESEARCH AREA	FY 2001 ALLOCATION	FY 2002 TENTATIVE ALLOCATION
a. Navigation Systems	$ 5,202,000	$ 7,341,000
b. Flood and Coastal Protection	3,933,000	3,844,000
c. Environmental Technologies	3,332,000	4,106,000
d. Infrastructure Engineering	4,482,000	4,401,000
e. Geospatial Technologies	2,463,000	3,157,000
f. Decision Support Technologies	1,283,000	1,151,000
	$20,695,000	$ 24,000,000

a. Navigation Systems

SUMMARIZED FINANCIAL DATA:

Estimated Five-Year (FY 2002-2006) Program Cost	$ 89,000,000
Allocation Requested for FY 2002	7,341,000
Balance to Complete After FY 2002	81,659,000
Allocation for FY 2001	5,202,000
Increase (Decrease) of FY 2002 Over FY 2001	2,139,000
Average Annual Allocation for FY 1997-2001	6,739,000

APPROPRIATION TITLE: General Investigations, FY 2002

3. Research and Development

a. Navigation (Continued)

JUSTIFICATION:

The Corps of Engineers' navigation mission is to provide safe, reliable, efficient, effective, and environmentally responsible waterborne transportation systems (channels, harbors, and waterways) for movement of commerce, national security needs, and recreation. The U.S. Marine Transportation System (MTS) consists of over 300 ports, 1,000 harbor channels, and 25,000 miles of navigation channels, and is an integral part of both the U.S. economy and national security system. The MTS contributes more than $700 billion per year to the gross domestic product, produces $150 billion per year in federal taxes, and employs more than 13 million people. It supports rapid deployment of military forces and movement of equipment and supplies from strategic ports. Despite its importance, the MTS is under serious strain. The Congressionally-mandated interagency MTS task force and maritime industry report that commercial navigation will double by 2020; yet the MTS is already operating at near-full capacity in many areas and is being challenged by new vessel designs and traffic loads which exceed its channel, harbor, and lock capacities. Eighty-three Corps' locks are older than their 50-year design life, and 11 of them are over 80 years old.

The Corps of Engineers' navigation project infrastructure encompasses a capital stock valued at approximately $31.5 billion with an annual budget of about $1.9 billion, which is not enough to meet existing needs, much less the projected demand on the system. The U.S. faces a loss in global competitiveness unless it addresses the navigation system's maintenance and modernization needs.

Excessive sediment erosion, transport, and deposition are estimated to cause damages of approximately $16 billion annually in North America (Osterkamp, W. R., P. Heilman, and L. J. Lane, "Economic Considerations of Continental Sediment Monitoring Program," International Journal of Sediment Research, (4) December 12-24, 1998). The Corps dredges about 285 million cubic yards per year at a cost of about $500 million. Sediment overloading from land and stream erosion causes significant environmental and economic challenges – excessive sediment in rivers, reservoirs, and estuaries may contribute to high turbidity, to loss of flood-carrying capacity, and to loss of full channel dimensions in navigation facilities. Yet, in other areas a shortage of sediment causes coastal erosion, streambank erosion, and wetlands loss in many locations. Management of sediment at regional scales has been specifically identified as a key component of high performance, environmentally sustainable water resource projects.

Water resource projects can be designed & operated to remedy local sediment problems, but sometimes at the expense of creating even larger problems some distance away. Successful project design and operation requires that sediment issues be resolved at both the local and regional levels, yet resource managers lack the information and tools they need to make informed decisions. These challenges adversely effect navigation, flood and storm damage reduction efforts, and environmental quality in water resource projects. The 1999 MTS Task Force report provides a national vision for the MTS of 2020 and recommends R&D on overall effective sediment management, including ". . . holistic watershed and local/regional planning efforts."

In light of these pressing national needs, this research and development program area provides tools and technology for the Corps of Engineers to improve the navigation system's functional performance, preserve and enhance environmental quality of our waterways, reduce unit costs, and improve safety. Specific objectives of this research thrust area are to develop engineering technologies that increase the effectiveness

and reduce the per project costs of harbor and channel projects that provide deep-draft and shallow-draft navigation for domestic and international commerce. Engineering tools, computer models, and design guidance are developed for defining and managing water levels and currents that affect navigation and sedimentation, waves that impact coastal structures and drive sedimentation processes, sediment that settles in navigation channels and harbors, and vessel transits within navigation channels and structures. Engineering tools, computer models, and design guidance are developed to enable rapid and economical navigation facility design, construction, repair, and rehabilitation. The program balances efforts on critical present-day problems facing the Corps of Engineers with those that prepare the Corps to meet U.S. navigation system needs of the future.

FY 2002 ACTIVITY: Major thrusts include coastal and inland waterways, navigation structures, and regional sediment management.

1. Coastal and Inland Waterways. Waterway hydrodynamics -- waves, currents, and water levels -- affect navigation safety and move sediment that shoals channels and harbors. Along with vessel impacts, they can also damage navigation structures (e.g., locks, guidewalls, breakwaters, and jetties). Research is underway to optimize navigation channel dimensions and depths based upon hydrodynamic forces, ship motions, and the future vessel fleet. Research is also underway to reliably and accurately describe and manage hydrodynamics in waterways and locks so that vessels transit more quickly and safely. For example, wave, current, and water-level data are being used to develop and validate models of coastal phenomena for effective navigation-project design based on accurate estimates of forces and design conditions. Designs are being developed for improved lock approach channels and more precise definition of underkeel clearance requirements. Improved navigation channel depth and width guidance is being developed to maximize the safe use of existing channels and minimize dredging requirements while maintaining navigation safety. Methods to estimate coastal-wave conditions through laser-ranging technology for planning, design, construction, maintenance, and operation of coastal structures as well as the mitigation of the impacts of navigation structures on adjacent shorelines are being developed.

2. Navigation Structures. The Innovations for Navigation Program, which is producing technologies for constructing and repairing inland navigation structures in a more efficient, cost-effective, and environmentally sound manner culminates in FY02. Products include grouts for underwater placement, float-in construction materials and methods, new lock filling and emptying designs, and an Integrated Analysis and Design System. Navigation projects that will benefit from the technology developed under this program include: (1) McAlpine Locks, (2) Inner Harbor Navigation Channel Lock Replacement, (3) Locks 2, 3, and 4, Monongahela River Project, (4) Replacement Lock at Soo Locks, (5) Marmet Lock Replacement, (6) Upper Mississippi River and Illinois Waterways System, (7) McClellan-Kerr Arkansas River Navigation System, (8) Olmsted Locks, (9) Ohio River Main Stem System, (10) Green and Barren River, and (11) Kentucky Lock.

Technologies are being developed to predict the performance of navigation structures such as training dikes, breakwaters, jetties, groins, seawalls, and/or revetments. The prediction and prevention of breakwater deterioration will facilitate risk assessments and future performance estimates in the design of new or rehabilitated structures. Methods also are being developed to inspect, evaluate, and repair or rehabilitate aging structures. The Coastal Engineering Manual (CEM), a state-of-the-art and comprehensive manual which incorporates all the tools and procedures used in planning, design, construction, maintenance, and mitigation of coastal navigation projects, will be distributed to the field through the Internet.

3. Research and Development

a. Navigation (Continued)

3. Regional Sediment Management. Maintaining navigable waterways in the face of continuing sediment deposition consumes a substantial portion of the Corps of Engineers' budget. More effective sediment management could reduce dredging costs in many projects by diverting sediment from channels and into designated deposition zones, stretching dredging funds further and keeping more projects fully maintained. An understanding of sediment processes is critical for producing cost-effective plans and designs for effective navigation projects, estimating channel shoaling, locating optimum dredged-material placement, and assessing the impact of navigation projects and structures on adjacent waters, shorelines, and downstream areas. Technologies are being developed to measure sediment transport, provide the fundamental knowledge required to evaluate alternative strategies for sediment management, and minimize or mitigate navigation-project impacts. Work on regional sediment management tools begun in prior years will be expanded and extended to other areas. For example, the Coastal Sediment Budget Analysis System, developed in prior years, will be extended upstream to estuaries and rivers and ultimately to watersheds. Work will begin to develop other knowledge and tools needed for effective regional sediment management, including regional monitoring, modeling, and analysis tools; designs for altering or mediating sediment pathways; methods for quantitative comparison of alternatives in terms of regional versus local effects; a knowledge base of suitable methods and lessons learned from experience; and project managers' decision support tools with local versus regional impacts tradeoffs.

FY 2001 ACCOMPLISHMENTS: Selected accomplishments include the following:

1. Bendway weir training structure design guidance was developed. These structures have resulted in millions of dollars of savings from reduction in dredging requirements, improved navigation efficiencies, improvement in navigation safety, reductions in traffic delays, and numerous environmental benefits. Bendway weirs' effects on navigation were evaluated for various design parameters, including spacing, height, length, and angle.

2. Guidance for design of navigation channels used by mixed fleets of shallow- and deep-draft vessels was developed. With increasing vessel drafts and continued improvements in bulk carrier and intermodal transportation efficiencies, more accurate channel design guidance will enable greater capacity in existing navigation channels.

3. Generalized design guidance on the layout of approach conditions to locks that will reduce delays and increase capacity was produced. Improvements to lock approaches have a high potential for reducing traffic delays on the inland waterway system and increasing the capacity of existing locks.

4. Guidance and technologies for design, construction, and repair: Final guidance for the design and use of precast, thin-wall panel components was prepared. Soil-structure interaction studies were performed on flexible retaining walls with multiple rows of anchors. Interim guidance was developed for the design and construction of connections and seals for large precast concrete modules. Interim guidance was developed for selection of methods and techniques to position and stabilize equipment/modules to allow positioning and placement of large float-in and lift-in precast sections within allowable tolerances. Concrete mixtures were evaluated using water quality rating procedures, and a report documented performance requirements, materials selection, proportioning, and water quality.

APPROPRIATION TITLE: General Investigations, FY 2002

3. Research and Development

a. Navigation (Continued)

Installation of float-in units for construction of dams was evaluated in field applications. Investigations were completed that are needed for updating design criteria for use on the construction of lock floor slabs and culverts underwater.

5. Individual components of the in-chamber longitudinal culvert design for lock filling and emptying systems were evaluated to find ways to improve the efficiency of the system through modification of these components.

6. Wave and littoral transport models were improved, with more realistic physics incorporated and a standard graphical user interface adapted for their use. Extensive field data sets were used to improve the models' formulations and prove their reliability. The coastal Sediment Budget Analysis System was fielded and a Diagnostic Modeling System for coastal channel sedimentation problems was put into trial use on several projects. These tools will collectively provide the Corps with more effective management of coastal navigation projects with less impact on adjacent shorelines.

b. Flood and Coastal Protection

SUMMARIZED FINANCIAL DATA:

Estimated Five-Year (FY 2002-2006) Program Cost	$31,500,000
Allocation Requested for FY 2002	3,844,000
Balance to Complete after 2002	27,656,000
Allocation for FY 2001	3,933,000
Decrease of FY 2002 over FY 2001	2,673,400
Average Annual Allocation for FY 1997-2001	

JUSTIFICATION:

This program conducts research and development in support of the primary Civil Works mission area of Flood and Coastal Storm Damage Reduction. In carrying out the Flood and Coastal Storm Damage Reduction mission, the Corps of Engineers operates 383 major lakes and reservoirs, maintains 8,500 miles of levees, and has over 100 coastal storm-damage reduction and related projects. The average annual flood damages prevented by Corps' projects from 1985 to 1994 was $14.6 billion. Return on investment from 1928 to 1993 has been 8.41:1. In the past five years, Federal shore protection expenditures have increased to more than $100,000,000 per year. Research for both coastal shore protection and inland flood damage reduction is now focusing upon reducing the life cycle costs and the loss of life and property. There is need to develop technologies for coastal shore protection and beach nourishment that assures the project is sustainable. In the inland area, there has been a shifting focus for new projects from large flood damage reduction projects towards watershed management and smaller flood damage

reduction systems. This has required an emphasis on the development of appropriate design guidance and planning and engineering technology to accelerate the process of restoring channels in a more cost-effective and environmentally sound manner. The sedimentation response of flood-control channels; improved conditions for navigating in deep-draft and shallow-draft channels; bank protection methods for flood-control and navigation channels; and ice impacts on flood-control and navigation channels and structures will be addressed.

There has been a new focus on development of innovative technologies for existing flood damage infrastructure, especially levees. New technologies are needed to assure existing levees provide the authorized level of protection and to assist with flood fighting operations. Innovative use of remote sensing for detection of weakened levees, satellite linked GIS/GPS laptops to assist with onsite flood fighting, and improved flood forecasting capabilities must be integrated.

While the emphasis for types of new projects is shifting, concurrently, existing projects must be optimally consistent with authorized purposes. Improved analysis methods for decision support for reservoir operations are needed. Also, watershed and riverine analysis methods need improvement to take advantage of new real-time data sources, such as precipitation radar, to accurately forecast real-time flow and stages. In addition, advanced statistical methods are needed to better understand project inflows and performance.

New technologies for reducing flood damages in urban areas are needed that include both structural as well as non-structural alternatives. Urban development in the inland areas, as well as the coastal areas, requires new technologies to reduce the flood damages in urban areas.

FY 2002 ACTIVITY:

1. The use of grade control structures for channel restoration is becoming more important across the US and around the World. Guidance for the proper sitting and spacing of grade control structures will be developed.

2. Determination of the physics of piping within existing levees is a high priority for determining remedial solutions to weakened levees. Analytical techniques will be developed to give design engineers guidance.

3. Development of a transportable system for field use during flood fighting operations to provide GIS/GPS capability and connectivity to a command center in a real-time mode will be finalized.

4. Vegetation in flood-control channels provides valuable habitat, especially in urbanized areas, and removal is subject to regulatory authorities. To remove vegetation, a determination of acceptable levels of vegetation must be made. Guidelines will be finalized and documented in various technical reports and engineering manuals for monitoring, maintenance, and management of vegetated flood control channels.

3. Research and Development

b. Flood and Coastal Protection (Continued)

5. Channel restoration is a significant objective of many current and proposed Corps local flood protection projects. Guidance will be developed for Hydraulic Design of Channel Restoration Projects. Guidelines will be documented in professional journals, technical reports and engineering manuals.

6. Numerical Modeling is frequently used in flood management and habitat enhancement engineering studies. A variety of multi-dimensional approaches exist. Guidance will be developed to explain the applicability, data requirements, and ease of use for the various modeling techniques.

7. Accretion of ice on dam walls, dam gates, strut arms, and other machinery still causes machinery to become inoperable. Optimization of existing and development of new deicing/anti-icing methods and materials will be pursued for application to new and rehabilitated water control structures.

8. A spatially distributed snowmelt model has been developed that includes forest canopy effects. Improved snowmelt algorithms under field-testing will be integrated in the Corps' next generation Hydrologic Modeling System (HEC-HMS).

9. Ice modules have been incorporated in Corps' hydraulic numerical models HEC-RAS and UNET. Development of discrete particle computer simulation programs of ice transport in rivers and in lock approaches has been initiated and will be continued to assist in the design of river ice management and control methods.

10. An ice jam database has been created that is available on line for use in ice jam control studies. Initial ice formation and ice jam predictive methods have been developed and will be pursued for use in risk and uncertainty analysis and other hydraulic projects.

11. Accurate and timely prediction of flood water elevations and flood damage during floods is critical to the successful protection of lives and property along river systems and for the design of flood management plans and protection projects. Enhanced computer models will be released for analysis of flood wave passage through rivers, locks and dams, tunnels, complex hydraulic channels, structures, and for flood damage reduction.

12. Determining reservoir releases during flood events requires consideration of increasingly complex data and circumstances, such as forecasted inflow, reservoir system status, flood plain occupancy vulnerability, and reservoir/flood plain wildlife environment, to name a few. New reservoir operation algorithms will be developed that will facilitate real-time operation of existing river-reservoir systems as well as evaluate tradeoffs in operational purposes and planning of new or modified systems.

APPROPRIATION TITLE: General Investigations, FY 2002

3. Research and Development

b. Flood and Coastal Protection (continued)

13. An apparent increase in extreme climate events, including El Nino effects, resulted in more attention to the potential for future flooding. Recent floods include the 1993 flooding in the upper Mississippi Basin and 1996 and 1997 flooding in the Sacramento Valley. The role of wetlands in natural flood attenuation is also of much interest. Improved flood runoff evaluation and forecasting techniques, companion computer models, and reporting/display methods will be developed that will significantly improve such analysis.

14. Urban flooding is a significant problem throughout the US and new guidance for reducing flood damages is necessary. Development of new innovative techniques for reducing flood damages will continue.

FY 2001 ACCOMPLISHMENTS:

1. Guidelines were developed for evaluating channel stability and sedimentation relative to the design and maintenance of vegetated flood control channels.

2. A procedure for determining roughness losses and water surface elevations in compound, meandering channels was developed.

3. Results of experiments to determine the impact of habitat enhancement measures that can slow flow on flood stages were analyzed.

4. Guidance for determining the channel discharge that is predominant in forming the channel was completed and published as a technical note.

5. The effect that in-stream structures have on channel roughness was documented in a technical report and professional paper.

6. The effect of channel roughness in compound meandering channels was documented in a technical note.

7. A workshop was held to identify the highest research needs in the area of urban flooding. Existing GIS/H&H and remote sensing capabilities with respect to existing levees were identified for use in future data base development.

8. Field laptop GPS/GIS mapping for use in flood fighting existing levees with communication to the command center was demonstrated.

9. A small waterproof handbook for flood fighting operations was completed.

10.The Ice Jam Database, which contains over 11,000 entries, is now fully accessible and searchable on the WEB for use in response to emergency situations and for background information for ice jam flood control studies.

APPROPRIATION TITLE: General Investigations, FY 2002

3. Research and Development

b. Flood and Coastal Protection (Continued)

11. A report on the impact of project operations on upstream and downstream ice conditions has been prepared.

- Laboratory tests have been performed to enhance the effectiveness of high flow bubbler systems for ice and debris control at locks and dams.

- A particle dynamic computer simulation model of ice transport and accumulation in lock approaches has been developed for use in the evaluation of proposed ice management methods.

- Design guidance (stone size, slope, substrate) to mitigate ice damages to riprap installation has been finalized from the results of laboratory tests.

- The river ice forecast model in larger rivers has been refined, a third and final winter test completed, and the final report completed.

- New methods and associated software that greatly improve the efficiency and accuracy of planning, design, and operation of flood damage reduction projects and support field office flood damage reduction studies and reservoir operations were released as follows:

    - A major new release of the Corps' River Analysis System (HEC-RAS) expands its applicability to simulation of dynamic flood waves through a variety of hydraulic structures and floodplain developments.
    - A major new release of the Corps' Hydrologic Modeling System (HEC-HMS) expands its capability to continuous simulation of soil moisture wetting and drying; this capability is especially important to reservoir inflow forecasting and water supply analysis.
    - A major new release of the Corps' Flood Damage Analysis Package (HEC-FDA) included an improved user interface and incorporation of GIS-based flood damage computations and displays.
    - The initial version of the Corps' new Reservoir System Simulation (HEC-RES) software was released.
    - A new software system using digital terrain and geographic information systems for the Corps' hydrologic and hydraulic modeling packages was released. This greatly enhances the preparation of input data and visualization of results.

APPROPRIATION TITLE: General Investigations, FY 2002

3. Research and Development (Continued)

c. Environmental Technologies

SUMMARIZED FINANCIAL DATA:

Estimated Five-Year (FY 2002-2006) Program Cost	$42,000,000
Allocation Requested for FY 2002	4,106,000
Balance to Complete after FY 2002	37,894,000
Allocation for FY 2001	3,332,000
Increase of FY 2002 over FY 2001	774,000
Average Annual Allocation for FY 1997-2001	4,308,000

JUSTIFICATION:

The Corps operates and maintains 25,000 miles of inland and coastal waterways, 562 reservoirs (5,500,000 surface acres), 237 navigation locks, 926 harbors, 75 hydropower projects, and 879 flood control projects as part of its water resource mission. Wide-ranging environmental stewardship is an integral part of Corps' water resource management. Moreover, recent U.S. figures have estimated $16 billion per year in damages caused by nonpoint-source pollution and up to 1 billion tons per year of eroded soils that are deposited in the Nation's waterways, severely impacting multiple project uses and impeding navigation. A critical part of this mission is to ensure that project planning, construction, operation, and maintenance, while economically viable, incorporate environmental stewardship and restoration. The Environmental Quality Research Area addresses the highest priority technical problems with state of science, cost-effective technologies for managing natural resources at Corps' projects, including identification, assessment, and management of contaminated dredged material; ecosystem management and restoration; wetlands functional assessment and restoration; management of the Nation's threatened and endangered resources; assessment and management of water quality problems; and the development of watershed assessment technologies at basin and sub-basin scales. This program will provide demonstrated economical solutions to the Corps' highest priority environmental problems, will reduce unnecessary regulatory burdens, and provide a very high return on taxpayer investment.

FY 2002 ACTIVITY:

1. Develop design and management guidance for restoring urban streams.

2. Develop habitat models for fishes and amphibians in floodplain pools.

3. Provide design guidance for riverine wetlands restoration.

APPROPRIATION TITLE: General Investigations, FY 2002

3. Research and Development

c. Environmental Technologies (Continued)

4. Develop community index models for determining habitat suitability of coastal and aquatic systems.

5. Develop regional guidebooks for determining potential functional loss for riverine, depressional, and coastal wetlands.

6. Develop population models for fresh and marine organisms.

7. Develop interpretive guidance for toxicity and bioaccumulation testing and assessment.

8. Develop technical framework and regulatory guidelines for dredging and disposal of contaminated sediment.

9. Develop decision support tools for surface water, groundwater, volatiles, leachate, runoff, effluent, toxicity, and bioaccumulation assessment pathways.

10. Develop components of the Inland, Ocean, and Upland testing manuals based on risk assessment.

11. Develop initial version of a state-of-the-art water-basin model providing the Corps with the capability to accurately manage river-basin hydrology and water quality.

12. Improve the watershed modeling system with important process-oriented information on relationships between land use and loading of ecologically-important nutrients.

13. Develop initial capabilities to simulate wetlands and riparian buffer zones within the watershed modeling system.

14. Develop Tech Note series on fundamental processes affecting water quality and the biotic structure of aquatic systems.

FY2001 ACCOMPLISHMENTS:

1. Developed habitat management guidelines for selected species at Corps' reservoirs and other water resource development projects.

2. Published Tech Notes (28) for stream and riparian ecosystem restoration, enhancement, and management techniques.

3. Developed data collection and analysis protocols for urban streams.

4. Developed guidelines for low-cost coastal restoration projects.

APPROPRIATION TITLE: General Investigations, FY 2002

3. Research and Development

c. Environmental Technologies (Continued)

5. Published “Wetlands Engineering Handbook” to provide design and engineering criteria for wetlands restoration projects.

6. Developed regional guidebooks for functional assessment of pine flatwoods in Southeast U. S.

7. Developed a population effects model pertinent to freshwater organisms—for direct input to the Corps/EPA Inland Disposal Testing Manual.

8. Developed a screening method for assessing the bioavailability of chemicals in contaminated dredged material (sediment).

9. Developed protocols for using Genosensors to screen for effects of dredged material (sediments) contaminants on benthic invertebrates.

10. Developed initial protocols for determining the presence of endocrine disrupting compounds in dredged material (sediments).

11. Developed a water quality management strategy based on relationships between reservoir design and operation and water quality.

12. Developed an expanded Corps watershed modeling system that enables selective assessment of land use effects on water quality in Corps’ projects on a larger, more “real-world” scale than before.

d. Infrastructure Engineering

SUMMARIZED FINANCIAL DATA:

Estimated Five-Year (FY 2002-2006) Program Cost	$28,000,000
Allocation Requested for FY 2002	4,401,000
Balance to Complete After 2002	23,599,000
Allocation for FY 2001	4,482,000
Increase (Decrease) of FY 2002 over FY 2001	(81,000)
Average Annual Allocation for FY 1997-2001	5,256,000

APPROPRIATION TITLE: General Investigations, FY 2002

3. Research and Development

d. Infrastructure Engineering (Continued)

JUSTIFICATION:

This program conducts research and development in support of the Corps' Civil Works mission to provide the Nation with responsive development and management of water resources infrastructure, in an environmentally, economically, and technically sound manner.

Budget constraints, increasing demand for, and deteriorating condition of the Nation's aging water resources infrastructure are challenges for the Corps. Key concerns are:

- Our nation's water highway system may not be able to meet 21st century demands
- America's water resources infrastructure may not support future generations
- Continued urbanization increases the flooding threat to our Nation's communities
- Many communities still lack adequate water and sewer systems necessary for their sustained development

Most of the water resources infrastructure is nearing or surpassing its 50-year planned design life. Complete replacement is economically and environmentally prohibitive.

The Corps is responsible for 879 flood control projects, 442 lakes and reservoirs, and maintains 8,500 miles of levees. The Corps operates 235 navigation locks, 73 hydropower projects, and maintains 400 miles of coastal structures. The U.S. Marine Transportation System consists of over 300 ports, 1,000 harbor channels, and 25,000 miles of navigation channels, and is an integral part of both the U.S. economy and national security system. These are unique facilities whose failure would result in severe loss of life and have significant economic impacts.

The Nation must have a sustainable water resources infrastructure fully capable of supporting national requirements. Ensuring expected performance levels requires innovative technologies to extend the useful life of these facilities, reduce life-cycle costs, and minimize rebuilding or replacement, using ecologically low-impact procedures and environmentally responsible materials. The Infrastructure Engineering and Management program (IEM) provides immediate and long-term R&D solutions for these problems. The enabling technologies of structural and geotechnical engineering design, geological and earthquake engineering, materials science, and structural risk analysis are developed in IEM. These technologies provide crosscutting support to the Corps' Civil Works mission areas of Flood and Coastal Storm Damage Reduction, Navigation Systems, and Environmental Stewardship.

FY 2002 ACTIVITY:

1. Guidance will be developed for safe, durable but also sustainable infrastructure repair and construction materials, design, construction & application procedures:
   - Environmentally friendly lubricants, automatic lubricating systems, selection of self-lubricating materials for heavily loaded components
   - Underwater urethane paint systems and commercially available aluminum pigmented coatings (Guide Specification CEGS-09965)

3. Research and Development

d. Infrastructure Engineering (Continued)

- Class F fly ash as a sustainable "cement," proportioning for low-shrinkage and erosion resistant concrete, lithium salts and alkalis.
- Surface preparation and materials selection for overcoating lead-based paint
- Export revised code RCSLIDE to CASE; design of anchored sheet pile walls (soil pressures, wall friction, moment reduction coefficients)
- Conduct workshop on welded connections for steel hydraulic structures, a serious safety issue for lock and dam operators

2. Develop guidance for well-calibrated engineering risk analysis for individual dams, groups of dams, and dam safety investments:
   - Procedures for estimating potential lives saved through dam safety investments and incorporation in interoperable GIS platform
   - Stochastic model and software for lift gates, and characterizing extreme floods, seepage and piping, spillway erosion, and uplift pressures
3. Develop means to assure life-safety from earthquake damage to Corps' dams and reservoir control structures:
   - Modular, PC-engineering ground motion analysis system, database of dam response records to validate and guide future analyses
   - Nonlinear code for dynamic structure-reservoir-foundation interaction for concrete dams, ductile code for intake towers
   - Large-strain deformation code for embankment dams, new criteria for liquefaction of fine soils prevalent throughout the central US
   - Pursue research breakthrough regarding liquefaction-no liquefaction at depth beneath large embankment dams
   - Guidance for measuring reservoir bottom absorption in the field and numerically accounting for it in dynamic nonlinear code
4. Develop predictive tools to improve geotechnical investigation, design, construction, and retrofitting of foundations and earth/rock structures:

   - Three-dimensional conceptualization of clay shale foundations that threaten dam stability, problem throughout Mississippi/Missouri River basin
   - Guidelines for determining whether or not to permit installation of utilities under Corps' levees, fundamental understanding of piping
   - Trenchless technology for minimum-impact urban geo-technologies, geological and geotechnical issues to support abandoned mine lands.

FY 2001 ACCOMPLISHMENTS:

1. New CASE Website, structural design codes and guidance:
   - LRFD program for tainter gates; a finite element model for a tainter gate girder to end frame connection
   - Preliminary development of alternative connection details for tainter gate girder to end frame connections
   - Report completed on the reaction mechanism between class C fly ash and cement
   - New guidance on both fabrication and repair welding of hydraulic steel structures to extend the life and eliminate maintenance welds that result in fatigue and fracture of the Corps' existing steel hydraulic structures
   - New computer-aided analysis tools for the design of pile foundations, nonlinear incremental structural analysis, design of steel members in tainter gates, and layout of concrete arch dams, including PC versions
2. Guidance for safe, durable but also sustainable infrastructure repair and construction materials, design, construction & application procedures:
   - Technical guidance for grout-enriched roller-compacted concrete construction, applies to lock replacement at McAlpine and Marmet
   - Technical guidance for high-strength, high-durability, reduced cost concrete mixtures (100-MPa compressive strength at 28 days)

3. Research and Development

d. Infrastructure Engineering (Continued)

3. Website established for environmentally acceptable lubricants; selection guidance for self-lubricating materials for floating mooring bitts, tainter valves, sector gears, strut arm bushings, and linkages
   - Standard data sheet protocol developed jointly between the Corps, material suppliers, and the International Concrete Repair Institute
   - Revised industry specification on inhibitive alkyd primer, metric designations incorporated into Guide Specification CEGS-09965
   - R&D results on performance of aluminum pigmented topcoats transferred to Steel Structures Painting Council to draft industry specs
   - Reduced required time for wet curing of cementitious materials from 7 to 2 days
   - Extended database for high performance coatings: 2 year performance of 2 epoxies on a lock structure in LRB; 1 year performance of 4 urethanes, 1 epoxy and 1 vinyl on tainter gates in SWL; 9 year performance of 1 urethane and 4 epoxy/urethane systems on a tainter gate in MVP; 13 year performance of 1 flame sprayed epoxy, 1 plural component urethane, and 3 epoxies on a tainter gate in MVR
   - Documented new coatings for high performance: epoxies on miter gates in LRB; fusion-bonded epoxy on pilings in NAE; thermal sprayed coating applied on gate using arc spray equipment in LRH
4. Development of and guidance for well-calibrated engineering risk analysis for individual dams, groups of dams, and dam safety investments:
   - Developed procedures for applying risk analysis to the dam safety investment decision-making process of an individual dam
   - Completed second demonstration application of portfolio risk analysis on a single district's portfolio of dams
   - Developed procedures for estimating potential lives saved through dam safety investments
   - Initial testing of proposed method and software for estimating the probability of rare floods in various hydro-meteorologic regions
   - Applied computer program, JOINT_FLOW, to a Corps' dam case history to assess viability for uplift uncertainty use
   - Developed procedures to assess reliability of gates and associated operating equipment
5. Assure life-safety from earthquake damage to Corps' dams and reservoir control structures:
   - Completed engineering, signal modification modules in PC-based engineering ground motion analysis system
   - Published report of significant lessons learned, damage to hydraulic structures, from recent earthquakes in India and San Salvador
   - Completed development of the three-dimensional seismic tomography and waterborne geophysical methods of site investigation
   - Developed guidance for investigating coarse deposits for in-situ shear strength determination
   - Held peer review and completed check tests and numerical modeling to validate break-through in liquefaction-at-depth findings
   - Completed cyclic physical model tests for intake towers and outlet works to determine ultimate capacity, new failure mechanisms, and quantified (a historical first) ductility available in these lightly reinforced concrete structures essential to reservoir control,
   - Validated numerical model for concrete dams with 1/20th-scale experiment of Koyna Dam and response data from Feitsui Dam, Taiwan
6. Develop predictive tools to improve geotechnical investigation, design, construction, and retrofitting of foundations and earth/rock structures:
   - Fielded soil-structure program, PC-STUBBS, making two-dimensional geotechnical analyses possible on a PC rather than mainframes
   - Validated predictive tool for rock spillway erosion from field data and case histories, modified SITES program
   - Provided initial technical guidance and past experience and requirements for utilities beneath levees
   - Documented case histories of piping events to improve fundamental and practical understanding of piping mechanisms.

APPROPRIATION TITLE: General Investigations, FY 2002

3. Research and Development (Continued)

e. Geospatial Technologies

SUMMARIZED FINANCIAL DATA:

Estimated Five-Year (FY 2002-2006) Program Cost	$15,000,000
Allocation Requested for FY 2002	3,157,000
Balance to Complete after FY 2002	11,843,000
Allocation for FY 2001	2,463,000
Increase of FY 2002 over FY 2001	694,000
Average Annual Allocation for FY 1997-2001	2,350,000

JUSTIFICATION:

The Geospatial Technologies Research Area comprises Survey and Mapping, Remote Sensing, and Geographic Information Systems (GIS). This area focuses on collection, management, analysis, and exploitation techniques for information tied to the earth's surface and subsurface (geospatial data). Typical digital data come from various sources, including bathymetric and topographic surveys, terrain digital elevation information, dredge and fill cuts, in-situ disposal sites, sub-bottom compositions, soil types, wetlands, land cover, endangered species and their habitat, stream and tide gages, cross sections, training structures, levees, dam deformation, HTRW sites, permits, piezometers, archeological sites, Corps projects, relief wells, damage from disasters, recovery missions, and many other sources. Data may be collected and analyzed for projects at specific sites or as part of systems: from subbasins to large river systems, from individual beaches to large coastal segments. These data support decision makers in all Corps' business program areas: navigation, flood and coastal storm damage reduction, hydropower, regulatory, environment, emergency management, recreation, water supply, and work for others. Accurate and reliable geospatial data are required by each business program for the effective planning, design, construction, operation, maintenance, and rehabilitation of projects.

Annual expenditures for these data average $175M, thus significant savings from more effective and efficient management of civil works projects and developments will be realized through the use of new data collection and management technologies, data analysis, and data exploitation. Improved understanding of the behavior of large systems has the potential to significantly lower the cost of dredging, beach nourishment, and dredged material placement. The program area balances tactical (short term/specific) and strategic (longer-term research needs not being addressed elsewhere) approaches to providing solutions to meet Corps' needs. Examples of cost savings already realized include: (1) savings in the tens of millions of dollars annually through improved understanding of snowmelt hydrology, (2) $10M annually with Corps-developed differential GPS, enabling integration of differential techniques and differential networks throughout the Corps, (3) disaster recovery savings of over $3.6M through the innovative use of spatial data analysis in planning for cleanup after Hurricanes Andrew and Georges, and (4) savings of over $66K when GIS was used to manage the Beaver Lake Shoreline (Little Rock District). Other savings noted include more rapid data retrieval and analysis with production improvement approaching 2:1; more accurate (up-to-date) maps; ability to conduct systemic analysis as for the Channel Improvement Project (1300 miles of the Mississippi River); automated river chart production with improved cartographic appearance, accuracy,

completeness, and currency; automated presentation capability and improved QA/QC in annual program reviews; improved data retention and longer data life with reduced re-collection costs; increased data sharing with lower collection costs; and improved, more defensible decision making.

FY 2002 ACTIVITY:

1. Develop draft process for compiling CADD navigation chart data to Electronic Navigation Charts for major navigable waterways such as the Mississippi, Ohio, and other river systems.

2. Evaluation of a new radar system for remote sensing of large spatial areas for determining the snow water equivalency and aerial distribution of snowpacks where terrain effects (forests/vegetation) mask signal interpretation for improved water control operations.

3. Assessment of how to effectively utilize high-resolution digital (1m) and multi-spectral (4m) data for interpreting the performance/conditions of hydraulic structures after severe flow events and for use in natural resources studies.

4. Evaluation of new/improved sensors for the Emergency Management functions that the COE performs in concert with FEMA, specifically looking at improving the damage estimates, reducing the time to obtain/analyze and transmit the information to the appropriate agencies.

5. Demonstrate the integration of a laboratory information system (chemical/biological/physical measurements for project studies) with a GIS system that displays/queries and reports the laboratory information in both spatial and time series output for project managers.

6. Report on the use of geospatial technologies for natural resources management.

7. Report on the capability of acoustic and ground-penetrating radars to detect objects, such as buried cables and wing dams, in navigable waterways.

8. Develop level four protocols/standards/software for seamless integration of model input/output data and other data using the commercial GIS software that will support all the Civil Works research areas as well as the Corps' business programs.

9. Complete development of software for integration of Corps real estate data (REMIS) into a GIS that is functionally compatible with other users in a District.

APPROPRIATION TITLE: General Investigations, FY 2002

3. Research and Development

e. Geospatial Technologies (Continued)

10. Develop new procedures and algorithms for evaluation of acoustic data to determine the location of the bottom and the location and depth of suspended sediments.

11. Demonstrate interoperable web-based geospatial technology incorporating industry specifications for integrating Corps business program areas with existing models and new models being developed from the R&D program.

12. Initiate software tools for the delineation/integration of wetland areas and water ecosystem management with emphasis on the riverine ecosystem communities.

13. Develop Arc IMS Emergency Management applications to improve interactive map production for flooding.

14. Improve software tools (i.e. automated) for utilizing terrain digital elevation data that quickly delineates watershed boundaries, maps channel areas, and accurately portrays the ground slopes, especially in the areas where structures mask the “true” ground surface.

15. Begin development of methods to use multi-beam acoustic systems for detection of rock and other navigation hazards.

16. Produce procedures and algorithms to use airborne laser and radar systems to accurately map flood plains and water control structures for failure prediction and emergency management.

16. Release software and documentation enabling improved cumulative impact analysis in wetland permitting.

17. Produce algorithms and statistics available or needed to assess correlation between terrain data post spacing and vertical accuracy.

18. Report on existing standards for tide modeling over regions with varying tidal characteristics.

FY 2001 ACCOMPLISHMENTS:

1. Completed development of commercial low-cost GPS and inertial hybrid system that enables positioning capability in obstructed areas.

2. Developed and distributed a new, high-precision method for the automated classification of remotely sensed data.

3. Released HEC-Flood Damage Analysis Version 5.0 with Integrated GIS capabilities.

APPROPRIATION TITLE: General Investigations, FY 2002

3. Research and Development

e. Geospatial Technologies (Continued)

4. Developed and applied methods for the distribution of high-resolution satellite imagery for natural resource inventory.

5. Developed documented procedures and guidelines for the specification of accuracy of geospatial data and analysis products.

6. Assessed capability of acoustic and ground-penetrating radars to detect objects, such as buried cables and wing dams, in navigable waterways.

7. Began development of new methods using radar to measure snow extent, snow water equivalent and liquid water content, and ground freeze-thaw and moisture state for improved water control.

8. Developed and documented methods for integration of Corps real estate data into GIS.

9. Implemented open architecture servers at a District/Division for web-based data exchange.

10. Initiated development of new techniques using satellite and airborne systems to remotely measure reservoir water quality.

11. Initiated development of Arc IMS emergency management applications to improve interactive map production for flooding including integration of WMS-produced flood polygons.

12. Completed development of small craft platform for surveys in surf and very shallow or obstacle-laden waterways.

13. Demonstrated linkages of Laboratory Information Management Systems for hazardous waste with commercial GIS.

14. Adopted standards for seamless integration of simulation models and commercial GIS software.

15. Demonstrated interoperable web-based geospatial technology incorporating industry specifications for flood simulation.

16. Conducted pilot projects in 3 Districts to collect CADD data on river bathymetry and convert it to river Electronic Navigation Charts.

17. Developed preliminary pre-processing algorithms for integration of Digital Elevation Models in hydraulic models.

18. Evaluated the suitability of airborne high-resolution (1 & 4m) digital imagery for emergency management with procedural guidelines for acquiring and using the data.

APPROPRIATION TITLE: General Investigations, FY 2002

3. Research and Development (Continued)

f. Decision Support Technologies

SUMMARIZED FINANCIAL DATA

Estimated Five-Year (FY 2002-2006) Program Cost	$16,000,000
Allocation Requested for FY 2002	1,151,000
Balance to Complete after 2002	14,849,000
Allocation for FY 2001	1,283,000
Decrease of FY 2002 over FY 2001	(132,000)

JUSTIFICATION: The Decision Support Technologies research area undertakes research and development activities leading to improved evaluation methods and decision making for Civil Works planning, engineering and operations. The area is composed of two R&D programs: Decision Support Technologies and Risk Analysis for Water Resources Investments. This R&D area is continuous, but its specific focus at any given time is dictated by problems and needs resulting from changes occasioned by legislative mandates such as WRDA 86, subsequent WRDA's, and revisions in broad Federal guidance for water resources planning and management. Budget constraints, increased partner cost sharing, and public concern for project and system performance and reliability require the development of new methods and analytical techniques to prioritize and support design, construction, and maintenance of Corps' projects. Decision Support R&D provides Corps personnel with the appropriate framework and analytical tools which are key to assessing current and future water resources problems, evaluating alternative competing solutions, and making the most informed decisions.

The Decision Support Technologies research program is aimed at developing improvements to Civil Works water resources investments decision-making, project formulation capabilities and to fulfill the need for analytical support tools for project delivery teams. Research conducted within this research program is directed toward reducing study time and costs and increasing the completeness, efficiency, effectiveness and acceptability of water resources projects. Tools include models, software, and technical guidance for economic and cost-effectiveness analysis, collaborative problem solving techniques, tradeoff, and multi-objective analysis to balance dissimilar values and valuing non-monetary outputs. Research outputs range from methods for facilitating local sponsor and stakeholder involvement in water resources planning to mathematical models and evaluation frameworks for formulating flood damage reduction projects and environmental restoration projects. The basic objectives of the program are to increase the knowledge and understanding of the physical, economic, social, and environmental relationships inherent in planning for the development of the Nation's water resources. Furthermore, to develop procedures for incorporating this knowledge into the planning process in a way that provides better professional, public and governmental decisions.

The Risk Analysis for Water Resources Investments research program objective is to develop procedures and frameworks that will enhance the overall performance of the Corps' civil works mission. In addition, the results from the program will enhance the Corps flexibility in responding to existing and future engineering challenges. Risk analysis is increasingly used to aid in decisions involving natural and man-made hazards and where information contains significant

uncertainties. Quantification of the underlying risk and uncertainty leads to more informed decisions on civil works investments and management of existing infrastructures. The research and development program includes the development and application of risk analysis techniques to a variety of issues and problems faced in the Corps' water resources planning, engineering, design, and operations. The program is aimed at addressing the crosscutting nature of water resource investment and management. To this end the program is managed in a unique coordinated effort across all the functions of planning, engineering, and operations. Products from the program include technical guidance to quantify risks and associated uncertainties in the underlying contributing engineering, economic, and environmental quantities. Program also develops models and software that combines these values to provide a complete assessment of engineering and economic performance in aid of decision making.

FY 2002 ACTIVITY

Decision Support Technologies:

Activity in FY 2002 will focus on improving and modernizing the project delivery and planning process along with development and update of plan formulation and economic evaluation procedures. Specific activities will include: 1) Development of plan formulation software and evaluation techniques for multi-agency watershed planning studies; 2) An assessment of local sponsor needs and expectations to facilitate improved public involvement and collaboration on water projects; (3)Integration of new planning and environmental models with economic and cost effectiveness models for river basin studies with a focus on improving procedures for linking environmental outputs to human services; 4) Develop better understanding of outputs to facilitate completion of tradeoff analysis for monetary and non-monetary outputs; 5) Develop evaluation framework for dam removal; and 6) Operationalize advances in ecological benefits evaluation. This will provide information, tools, and procedures to enable Corps planners to more effectively and systematically implement watershed studies, undertake more effective and efficient planning studies, and to improve partnerships, reduce conflict, and provide information to better evaluate effects of alternative plans: economic, environmental, and social.

Risk Analysis for Water Resources Investments:

The program will continue the development of tools to improve decision making across all civil works areas. Activities in the program will include**:** (a)Complete the basic approach, framework, and training materials for using risk analysis to aid decisions on ecosystem investments; (b)Complete testing and fielding of software tools that integrate uncertainty in environmental models and parameters, hydrologic, and hydraulic variables; (c) Complete the final phase of quantifying uncertainties in environmental models and parameters for environmental restoration; (d) Complete development of interim approach, procedures, and training materials for quantifying overall engineering and economic risk of deep draft navigation investments; (e) Complete identification and quantification of uncertainty in models and parameters in hydraulic models for deep draft navigation; (f) Complete interim tools for quantifying uncertainty in economic-and planning-related variables in deep draft navigation evaluation; (g) Complete development of analytical tools for evaluating residual flood risk and communication tools to assist in

FY 2001 PROGRAM Accomplishments

decision making on flood risk-reduction measures; (h) Complete first-generation internet-based information center for Civil Works risk analysis; and (i) Initiated development of model combining engineering, economic, and environmental aspects to evaluate hurricane protection and storm damage reduction projects.

Decision Support Technologies:

The program provided methods, data, and analytical tools to improve water resources investment decisions to include the following: 1) windows based cost-effectiveness evaluation software tool used by Corps and other agencies to evaluate non-monetary outputs of Corps projects; 2) assessment of significant process and policy changes affecting National Economic Development analysis; 3) develop state-of-the-art technology transfer ecosystem restoration formulation, evaluation and procedures; 4) review of stakeholder/collaborative planning techniques; 5) a review tradeoff analysis, factoring monetary and non-monetary outputs and balancing of multiple non-monetary outputs; 5) planning handbook of bio-engineering features for restoration projects; and 6) compilation of completed Section 1135 Corps projects in a lessons learned display. Training materials and workshops are frequent outputs of research work units.

Risk Analysis for Water Resources Investments:

Accomplishments of the program are**:** (a) Reports with training materials on use of risk-management concepts and tools in Civil Works management; (b) Report quantifying uncertainty in project financial and economic costs with example application to feasibility study; (c) Publish report on quantifying costs, with associated uncertainty, of environmental restoration projects; (d) Publish final report on the use of eliciting and using subjective probabilities for engineering, economic, and other variables; (e) Publish manual of procedures for eliciting expert judgment for Civil Works; (f) Publish final report with case example on approaches for quantifying uncertainty in project financial and economic costs; (g) Completed initial environmental restoration risk-based analysis framework integrating uncertainty in environmental models and parameters, hydrologic and hydraulic variables; (h) Completed second-phase identification and quantification of uncertainties in environmental models and parameters for environmental restoration; (i) Completed second phase of development of interim approach, procedures, and training materials for quantifying overall engineering and economic risk of deep draft navigation investments; (j) Completed first phase of identification and quantification of uncertainty in models and parameters in hydraulic models for deep draft navigation; (k) Completed first phase of development of interim tools for quantifying uncertainty in economic- and planning-related variables in deep draft navigation evaluation; and (l) Completed first phase of development of analytical tools for evaluating residual flood risk and communication tools to assist in decision making on flood risk-reduction measures.

Justification of Estimates for Civil Functions Activities
Department of the Army, Corps of Engineers
Fiscal Year 2002

SUMMARY OF REMAINING ITEMS
CONSTRUCTION, GENERAL

	FY 2001 Allocation	FY 2002 Request	Increase (Decrease)
2. Navigation Projects			
a. Channels and Harbors			
(II) Projects Not Specifically Authorized By Congress (Sec. 107, P.L. 86-645)	11,000,000	7,000,000	(4,000,000)
(III) Mitigation of Shore Damages Attributable to Navigation Projects (Sec. 111, P.L. 90-483)	300,000	500,000	200,000
(IV) Dredged Material Disposal Facilities Program (sec. 101, P.L. 99-662)	5,000,000	9,000,000	4,000,000
c. Inland Waterways Users Board (Sec. 302, P.L. 99-662)			
(I) Board Expenses	45,000	45,000	0
(II) Corps Expenses	185,000	185,000	0
4. Shore Protection Projects			
b. Projects Not Specifically Authorized by Congress (Sec. 103, P.L. 87-874)	2,500,000	5,000,000	2,500,000
5. Flood Control Projects			
a. Local Protection			
(II) Projects Not Specifically Authorized by Congress (Sec. 205, P.L. 80-858)	35,000,000	30,000,000	(5,000,000)
(III) Emergency Streambank and Shoreline Protection (Sec. 14, P.L. 79-526)	9,000,000	7,000,000	(2,000,000)
(IV) Snagging and Clearing (Sec. 208, P.L. 83-780)	600,000	1,000,000	400,000
6. Dam Safety and Seepage/Stability Correction Program	7,000,000	5,000,000	(2,000,000)

Justification of Estimates for Civil Functions Activities
Department of the Army, Corps of Engineers
Fiscal Year 2002

SUMMARY OF REMAINING ITEMS
CONSTRUCTION, GENERAL

	FY 2001 Allocation	FY 2002 Request	Increase (Decrease)
10. Improvement of the Environment			
a. Project Modifications for Improvement of the Environment (Sec. 1135, P.L. 99-662)	21,000,000	21,000,000	0
b. Aquatic Ecosystem Restoration (Section 206, P.L. 104-303)	19,000,000	15,000,000	(4,000,000)
12. Aquatic Plant Control Program	4,000,000	3,000,000	(1,000,000)
13. Beneficial Uses of Dredged Material (Sec. 204, P.L. 102-580)	4,000,000	1,500,000	(2,500,000)
14. Employees Compensation (Payments to Department of Labor)	19,200,000	20,000,000	800,000
Total	137,830,000	125,230,000	(12,600,000)

APPROPRIATION TITLE: Construction, General, FY 2002

2. Navigation Projects

a. Channels and Harbors

(II) Projects not Specifically Authorized by Congress (Section 107, PL 86-645, as amended)

Allocation FY 2001	$11,000,000	Tentative Allocation FY 2002	$7,000,000

GENERAL: Section 107 of the River and Harbor Act of 1960 (PL 86-645), as amended, authorizes up to $35,000,000 annually for construction of navigation projects where such construction is not already specifically authorized by Congress. Projects are designed to provide the same complete navigation project that would be provided under regular authorization procedures. Each project selected must be economically justified and complete within itself. Federal cost participation cannot exceed $4,000,000 per project.

BUDGET REQUEST: The $7,000,000 requested for Fiscal Year 2002 is to continue the Section 107 program of development and construction of navigation projects at locations throughout the Nation.

(III) Mitigation of Shore Damages Attributable to Navigation Projects (Section 111, PL 90-483, as amended)

Allocation FY 2001	$300,000	Tentative Allocation FY 2002	$500,000

GENERAL: Section 111 of the River and Harbor Act of 1968 (PL 90-483), as amended, authorizes the construction of projects for the prevention or mitigation of shore damages attributable to Federal navigation works. The cost of installation is cost shared in the same manner as the costs for the project causing the shore damage were shared. The cost of operation and maintenance is borne by the non-Federal sponsor. Projects first cost shall not exceed $5,000,000 without specific authorization by Congress.

BUDGET REQUEST: The $500,000 requested for Fiscal Year 2002 is to continue the Section 111 program of mitigation of shore damages attributable to Federal navigation works.

APPROPRIATION TITLE: Construction, General, FY 2002

2. Navigation Projects

a. Channels and Harbors

(IV) Dredged Material Disposal Facilities Program

Allocation FY 2001	$5,000,000	Tentative Allocation FY 2002	$9,000,000

GENERAL: Section 101 of the Water Resources Development Act of 1986 (WRDA 86)(Public Law 99-662) as amended by Section 201 of the Water Resources Development Act of 1996 (WRDA 96)(Public Law 104-303) established consistent cost-sharing for construction of dredged material disposal facilities associated with Federal navigation projects, including disposal facilities for Federal project maintenance. The costs of constructing land-based and aquatic dredged material disposal facilities associated with the construction, operation, and maintenance of all Federal navigation harbors and inland harbors shall be considered costs of constructing a general navigation feature of the project and shall be shared in accordance with the procedures set forth in section 101(a) of WRDA 86.

BUDGET REQUEST: The $9,000,000 requested for Fiscal Year 2002 will be used for the Federal share of construction of applicable dredged material disposal facilities required for maintenance of existing projects, reimbursement of non-Federal sponsors for dredged material disposal facilities constructed by them in advance of Federal appropriations for such purpose, or fee payments to private entities for the use of privately owned dredged material disposal facilities if such a facility is the least cost alternative to dispose of dredged material. All costs for dredged material disposal facilities associated with project construction and maintenance will be reimbursed from the Harbor Maintenance Trust Fund.

APPROPRIATION TITLE: Construction, General, FY 2002

2. Navigation Projects

c. Inland Waterways Users Board

Allocation FY 2001	$230,000	Tentative Allocation FY 2002	$230,000

The $230,000 requested for Fiscal Year 2002 is to support, operations and expenses of the Inland Waterways Users Board, established by Section 302 of the Water Resources Development Act of 1986, (PL 99-662) and pursuant to the Board's charter, approved by the Secretary of the Army on March 3, 1987. The Board is an advisory committee subject to the requirements of the Federal Advisory Committee Act (PL 92-463).

(1) Funds in the amount of $45,000 are requested to meet the estimated expenses of the eleven member Board for its travel, meeting, and other needs to meet the requirements of the Charter.

(2) Funds in the amount of $185,000 are requested for Corps of Engineers expenses related to its responsibilities as an advisory committee sponsor. The Director of Civil Works has been designated Executive Director to the Board, and he has designated staff members to provide continuing Board support. Corps expenses will include personnel costs for administrative Board meeting support, including staff travel, clerical, printing, and related materials.

4. Shore Protection Projects

b. Projects Not Specifically Authorized by Congress (Section 103, PL 87-874, as amended)

Allocation FY 2001	$2,500,000	Tentative Allocation FY 2002	$5,000,000

GENERAL: Section 103 of the River and Harbor Act of 1962 (PL 87-874), as amended, authorizes up to $30,000,000 annually for construction of shore restoration and protection projects where not already specifically authorized by Congress. Projects under this special authority are formulated to provide the same complete project and same degree of protection provided under regular authorization procedures. Each project selected must be economically justified and complete within itself. Federal cost participation is limited to $3,000,000 per project.

BUDGET REQUEST: The $5,000,000 requested for Fiscal Year 2002 is to continue the Section 103 program of development and construction of hurricane and storm damage protection measures along the Nation's shorelines.

APPROPRIATION TITLE: Construction, General, FY 2002

5. Flood Control Projects

a. Local Protection

(II) Projects Not Specifically Authorized by Congress (Section 205, PL 80-858, as amended)

Allocation FY 2001	$35,000,000	Tentative Allocation FY 2002	$30,000,000

GENERAL: Section 205 of the Flood Control Act of 1948 (PL 80-858), as amended, authorizes up to $40,000,000 annually for construction of flood control projects where such construction is not already specifically authorized by Congress. Projects are designed to provide the same complete project and same degree of protection provided under regular authorization procedures. Each project selected must be economically justified and complete within itself. Federal cost participation is limited to $7,000,000 per project.

BUDGET REQUEST: The $30,000,000 requested for Fiscal Year 2002 is to continue the Section 205 program of development and construction of flood damage prevention projects at locations throughout the Nation.

(III) Emergency Streambank and Shoreline Protection (Section 14, PL 79-526, as amended)

Allocation FY 2001	$9,000,000	Tentative Allocation FY 2002	$7,000,000

GENERAL: Section 14 of the Flood Control Act of 1946 (PL 79-526), as amended, authorizes up to $15,000,000 annually for the construction of emergency bank protection works to prevent flood damages to highways, bridge approaches, public works, churches, hospitals, schools, and other non-profit public services. Each project selected must be economically justified and complete within itself. Federal participation under this authority is limited to a cost of not more than $1,000,000 at any single locality.

BUDGET REQUEST: The $7,000,000 requested for Fiscal Year 2002 is to continue the Section 14 program of emergency bank protection construction to prevent flood damages to highways, bridge approaches, and essential public facilities at locations throughout the Nation.

APPROPRIATION TITLE: Construction, General, FY 2002

5. Flood Control Projects

a. Local Protection

(IV) Snagging and Clearing (Section 208, PL 83-780, as amended)

Allocation FY 2001	$600,000	Tentative Allocation FY 2002	$1,000,000

GENERAL: Section 208 of the Flood Control Act of 1954 (PL 83-780), as amended, authorizes up to $7,500,000 annually for removing accumulated snags and other debris, and clearing and straightening of the channels in navigable streams and tributaries thereof, when in the opinion of the Chief of Engineers such work is advisable in the interest of flood control. Federal cost participation under this authority is limited to a cost of not more than $500,000 for any single tributary. Each project selected must be economically justified and complete-within-itself.

BUDGET REQUEST: The $1,000,000 requested for Fiscal Year 2002 is to continue the Section 208 program of channel clearing in the interest of flood control at locations throughout the Nation.

APPROPRIATION TITLE: Construction, General, FY 2002

6. Dam Safety and Seepage/Stability Correction Program

Allocation FY 2001	$7,000,000	Tentative Allocation FY 2002	$5,000,000

GENERAL: The Dam Safety and Seepage/Stability Correction Program provides for modification of completed Corps of Engineers dam projects. There are over 700 dam projects under Corps jurisdiction. While no Corps dams are in imminent danger of failure, some may have a higher dam-safety risk than originally anticipated based on new data or the likelihood of extremely large floods and seismic events. Seepage problems at USACE dams are usually related to increased reservoir levels above the previous pool of record at a project. Static instability generally involves movement that starts at a slow rate and could result in massive displacement of large volumes of material if not corrected. Seepage/stability correction projects are classified as major rehabilitations. Dam modification work is proceeding under existing authorities on projects where cost-effective risk reduction measures have been identified and approved.

BUDGET REQUEST: The $5,000,000 requested for Fiscal Year 2002 will be used to initiate Dam Safety and Seepage/Stability projects which may be approved during FY 2002 as a result of studies now underway.

APPROPRIATION TITLE: Construction, General, FY 2002

10. Improvement of the Environment

a. Project Modifications for Improvement of the Environment (Section 1135, PL 99-662, as amended)

Allocation FY 2001	$21,000,000	Tentative Allocation FY 2002	$21,000,000

GENERAL: Section 1135 of the Water Resources Development Act of 1986 (PL 99-662), as amended authorizes review of Corps water resources projects to determine the need for structural or operational modifications for the purpose of improving the quality or the environment in the public interest; to determine if the operation of such projects has contributed to the degradation of the quality of the environment; and to carry out a program of such modifications that are feasible and consistent with authorized project purposes. Up to $25,000,000 may be appropriated annually. The non-Federal share of the cost of any modifications will be 25 percent. Modifications with estimated Federal costs over $5,000,000 require specific Congressional authorization.

BUDGET REQUEST: The $21,000,000 requested for Fiscal Year 2002 is to continue the Section 1135 program of project modifications in the interest of improving the quality of the environment.

b. Aquatic Ecosystem Restoration (Section 206, P.L. 104-303)

Allocation FY 2001	$19,000,000	Tentative Allocation FY 2002	$15,000,000

GENERAL: Section 206 of the Water Resources Development Act of 1996 authorizes up to $25,000,000 annually to carry out aquatic ecosystem restoration projects that will improve the quality of the environment, are in the public interest and are cost-effective. Non-Federal interests shall provide 35 percent of the cost of construction including provision of all lands, easements, rights-of-way, and necessary relocations. Non-Federal interests shall pay 100 percent of the cost of operation, maintenance, replacement and rehabilitation. Not more than $5,000,000 in Federal funds may be allocated to a project at a single locality.

BUDGET REQUEST: The $15,000,000 requested for Fiscal Year 2002 is to continue the Section 206 program of aquatic habitat restoration.

12. Aquatic Plant Control (APC) Program

Allocation FY 2001	$4,000,000	Tentative Allocation FY 2002	$3,000,000

GENERAL: Aquatic plant control research is the nation's only Federally authorized research program for technology which is necessary to manage non-indigenous aquatic plant species. The objective of the research is to develop cost effective, environmentally compatible aquatic plant control technology, including biological, chemical, and integrated control methods. Research involving management strategies and applications and ecological factors are also being conducted. The control technology, management strategies and ecological understanding resulting from APC research forms the national base in the APC area, and is applied not only to control aquatic plant infestations in public waters nationwide, but is also essential to cost effective, environmentally compatible, aquatic plant control for the operation and maintenance of Corps projects. Nearly 3.0 million acres nationwide are now infested with problem aquatic plants. The Corps manages over 5.6 million surface acres of water at its reservoir projects alone, with significant additional acreage as part of navigation projects. Eurasian watermilfoil, hydrilla, alligatorweed, and other exotic species continue to expand from local infestations, many of which are interfering with navigation, flood control, hydropower production water quality and aquatic habitat. New colonies of objectionable aquatic plants continue to be found, such as hydrilla in the southeast and Eurasian watermilfoil in the Midwest. The direct application of technologies developed by research under the Aquatic Plant Control Program have resulted in the reduction of waterhycinth in the Gulf Coast States and California of over 3 million acres. In Louisiana alone, water hyacinth has been reduced from 1.5 million acres to about 200,000 acres. In addition, technology developed by the APC research program has resulted in a nationwide reduction of alligatorweed. Estimated annual savings produced by application of these APC research technologies are between $15,000,000 and $20,000,000 over the costs of conventional methods. The Aquatic Plant Control Program is authorized by Section 104 of the River and Harbor Act of 1958, (P.L. 85-500), as amended by Section 104 of the River and Harbor Act of 1962, (P.L. 87-874), Section 302 of the River and Harbor Act of 1965 (P.L. 89-298), and Sections 103, 105, and 941 of the Water Resources Development Act of 1986 (P.L. 99-662), Section 225 of the Water Resource Development Act of 1996 and Section 205 of the Water Resource Development Act of 1999 (P.L. 106-53). The APC program has an annual expenditure ceiling of $15,000,000.

BUDGET REQUEST: The $3,000,000 requested for Fiscal Year 2002 will be used for continued research efforts for aquatic plant control technologies to support the operation and maintenance of Corps projects. Efforts will focus on control methods for submersed aquatic plants (i.e. Eurasian watermilfoil, and hydrilla), with emphasis on biological control agents, chemicals, integrated control methods, management strategies and ecological factors that impact non-indigenous aquatic plant species . Research efforts are fully coordinated with other Federal, state, and local agencies to prevent duplication of effort and to ensure that research under this program is consistent with, and complementary to, the research efforts of others. The cost of research dealing with problems/outputs of regional or nationwide importance is 100 percent Federal.

APPROPRIATION TITLE: Construction, General, FY 2002

13. Beneficial Uses of Dredged Material (Section 204, P.L. 102-580, as amended)

Allocation FY 2001	$4,000,000	Tentative Allocation FY 2002	$1,500,000

GENERAL: Section 204 of the Water Resources Development Act of 1992 (Public Law 102-580) authorizes the Secretary of the Army to carry out projects for the protection, restoration, and creation of aquatic and ecologically related habitats, including wetlands, in connection with dredging for construction, operation, or maintenance by the Secretary of an authorized navigation project. Annual appropriations not to exceed $15,000,000 are authorized. Non-Federal interests are required to share in a minimum of 25 percent of the cost of each project including the provision of all required lands, easements, rights-of-way and relocations with the value of these contributions included in the 25 percent non-Federal share of the project and to pay 100 percent of the operation, maintenance, and replacement and rehabilitation cost of the wetland or other aquatic habitat area. The costs of the habitat protection, restoration or creation project are limited to costs which are in excess of those costs necessary to carry out the dredging for the authorized navigation project.

BUDGET REQUEST: The $1,500,000 requested for Fiscal Year 2002 is to continue a cost shared program for the protection, restoration and creation of aquatic and ecologically related habitats, including wetlands.

APPROPRIATION TITLE: Construction, General, FY 2002

14. Employees Compensation (Payments to the Department of Labor)

Allocation FY 2001	$19,200,000	Tentative Allocation FY 2002	$20,000,000

GENERAL: Public Law 94-273, approved April 21, 1976, 5 USC 8147b, provides that each agency shall include in its annual budget estimates a request for an appropriation equal to costs previously paid from the Employees Compensation Fund on account of injury or death of employees or persons under the agency's jurisdiction.

BUDGET REQUEST: The $20,000,000 requested for Fiscal Year 2002 represents the total costs of benefits and other payments made from the Employees Compensation Fund during the period July 1, 1999, through June 30, 2000, due to injury or death of persons under the jurisdiction of the Corps of Engineers civil functions and also includes $800,000 for the investigation of fraudulent claims for workers' compensation benefits.

DEPARTMENT OF THE ARMY, CORPS OF ENGINEERS -- CIVIL

OPERATION AND MAINTENANCE, GENERAL

FISCAL YEARS 2001 - 2002 SUMMARY OF REMAINING ITEMS

Activity	Nat./ Lab	FY 2001 Appropriation	FY 2002 Program	01 - 02 Increase (Decrease)
		($)	*($)*	*($)*
1. Navigation Projects				
a. Channels and Harbors				
- Coastal Inlet Research Program	R	2,750,000	2,750,000	0
- Dredge WHEELER Ready Reserve	R	8,000,000	8,000,000	0
- Dredging Operations and Environmental Research (DOER)	R	7,000,000	7,000,000	0
- Dredging Operations Technical Support (DOTS) Program	L	1,500,000	1,500,000	0
- Monitoring of Coastal Navigation Projects	L	1,700,000	1,700,000	0
b. Locks And Dams				
- Aquatic Nuisance Control Research (formerly Zebra Mussels)	R	700,000	700,000	0
2. Flood Control				
- Cultural Resources (NAGPRA/Curation)	N	1,500,000	1,500,000	0
- National Dam Safety Program	N	40,000	40,000	0
- National Dam Security Program	N	25,000	25,000	0
National Lewis and Clark Commemoration Coordinator	N	300,000	300,000	0
- Recreation Management Support Program (RMSP)	L	1,500,000	1,500,000	0
- Water Operations Technical Support (WOTS) Program	L	700,000	700,000	0
4. Protection of Navigation (The four items, a, b, c, and d are on one justification sheet)				
- Dredging Data and Lock Performance Monitoring System	N	1,000,000	1,000,000	0
- Group of Four:				
a. Protecting, Clearing and Straightening Channels (Sec.3)	N	50,000	50,000	0
b. Removal of Sunken Vessels	N	500,000	500,000	0
c. Waterborne Commerce Statistics	N	4,000,000	4,000,000	0
d. Harbor Maintenance Fee Data Collection	N	575,000	575,000	0
5. National Emergency Preparedness Program (NEPP)	N	4,000,000	4,000,000	0
6. Project Operations Support Program				
- Earthquake Hazards Program For Buildings and Lifelines	L	500,000	500,000	0
- Great Lakes Sediment Transport Models	L	500,000	500,000	0
- Management Tools For Operation and Management	L	500,000	500,000	0
- Performance Based Budgeting Support program	N	415,000	415,000	0
- Regional Sediment Management Demonstration Program	R	1,500,000	1,500,000	0
- Reliability Models Program For Major Rehabilitation	L	675,000	675,000	0
		39,630,000	**39,930,000**	**0**

APPROPRIATION TITLE: Operation and Maintenance, General -- **Fiscal Year 2002**

1. NAVIGATION

a. Channels and Harbors

Coastal Inlets Research Program

SUMMARIZED FINANCIAL DATA:

Estimated Twelve-Year (FY 1994-2005) Program Cost	$ 30,000,000
Allocation Requested for FY 2002	**2,750,000**
Balance to Complete after FY 2002	9,000,000
Allocation for FY 2001	2,750,000
Increase of FY 2002 from FY 2001	0
Average Annual Allocation 1994-2001	2,625,000

JUSTIFICATION:

Based on past experience, the Corps of Engineers will expend an estimated $8 to $10 billion over the next 25 years at the more than 100 tidal inlets with existing Federal navigation projects to create and maintain navigation channels and structures, and to mitigate damages to adjacent beaches. Political, engineering, and demographic factors may increase these costs. The public perception, right or wrong, that Federal activities at inlets cause adverse response at adjacent beaches may require additional, expensive mitigation. Public sensitivity to current maintenance practices, where dredged material is placed in offshore disposal areas, may result in requirements for more nearshore placements of maintenance materials to benefit adjacent beaches. Inlets are the primary conduits for the transport of environmental constituents between bays and the open ocean, and the Corps may be constrained from performing present activities unless it can make accurate predictions of inlet response, and thus environmental response, to such activities.

Little research to develop cost-reducing technology has been directed at coastal inlets. The Coastal Navigation and Storm-Damage Reduction Research Program, funded under the base General Investigations R&D Program, has studied some aspects of coastal inlets, particularly the development of scour at structures placed at inlets and the movement of sediment in and near inlets. However, these studies are insufficient in funding, scope, and content to satisfy the design and maintenance needs of the Corps of Engineers relative to coastal inlets. Therefore, the Coastal Inlets Research Program was initiated in FY 1994 to address the special needs of the Corps in this area.

The Coastal Inlets Research Program is a fixed-length program to increase Corps capabilities to cost-effectively design and maintain the over 100 inlet projects which comprise the bulk of coastal operations and maintenance (O&M) expenditures. Because of their complex nature, the behavior of inlets is poorly understood. This has resulted in the Corps spending more of its O&M budget than necessary to maintain inlet projects. The Coastal Inlets Research Program will study functional aspects of inlets such as their short- and long-term behavior and their response to waves, tides, currents, and man-made changes, given their geologic makeup. As inlet behavior becomes better understood, sophisticated tools for management of inlets for navigation projects, such as models and empirical

relationships, will become available. These new tools will lead to more efficient, cost effective designs that will reduce O&M requirements and, consequently, costs.

FY 2002 ACTIVITY:

a. Focus Coastal Inlets Research Program R&D on deep-draft channels in support of Corps projects nation-wide with aim of developing tools for predicting dredging requirements and reducing associated O&M costs.

b. Validate the Inlet Modeling System, scour model, and morphology change models at deep-draft channels, including Cape Fear, NC; Humboldt Bay Entrance, CA; and Grays Harbor, WA.

c. Perform physical modeling studies on innovative jetty design to reduce dredging costs and improve navigation safety at deep-draft entrance channels.

d. Extend the long-term morphology modeling system to include the adjacent beaches, navigation channel, and flood shoal together with the ebb shoal. Validate and release the model to the public.

e. Acquire field data at inlet jetties to understand the beach and jetty interaction through rip currents.

f. Conduct comprehensive technology-transfer workshops on all coasts of the U.S. to provide training to Corps personnel, private industry, and universities on techniques and models developed in the Coastal Inlets Research Program.

FY 2001 ACCOMPLISHMENTS:

a. Developed and verified a physical-processes based automated sediment budget system for management of inlets and adjacent beaches. This system, which incorporates a procedure for calculating uncertainty associated with inlet sediment budgets, was applied to Shinnecock Inlet, NY, and in regional studies on the Gulf of Mexico coast (AL, FL) and on the Atlantic coast of Florida to assist in design of remedial efforts at those sites. The system was released Corps wide and to consulting companies and academia.

b. Developed and verified a numerical model to predict scour for regions characterized by local flow curvature, flow separation, entrainment, and flow interaction with inlet structures. Applied to Matagorda Ship Channel, TX; Ventura Harbor, CA; and Shinnecock Inlet, NY. Model is released to public through the world-wide web.

c. Developed a web-based tutorial and handbook on coastal inlets called “Inlets Online” that addresses needs from the professional engineering and science level to college and high school education.

d. Conducted major laboratory experiments and theoretical studies on wave diffraction at inlets. Upgraded the Corps’ numerical wave model to test the diffraction algorithm.

e. Began planning for transition of R&D to deep-draft navigation channels for reduction of O&M dredging and cost of doing business.

f. Conducted technology-transfer workshop in Florida for 60 Corps, consulting companies, and university staff members.

g. Continued validation of the Inlet Modeling System. This is an integrated modeling system for field use to calculate tidal circulation, waves (with wave-current interaction), and sediment transport at high resolution. This modeling system will allow assessment of jetty modifications, channel infilling, and channel alignment for reduction of dredging and improved navigation safety. Trial evaluations of the system were conducted at Willapa Bay, WA, and Shinnecock Inlet, NY.

APPROPRIATION TITLE: Operation and Maintenance, General -- **Fiscal Year 2002**

1. NAVIGATION

a. Channels and Harbors

Dredge WHEELER Ready Reserve

SUMMARIZED FINANCIAL DATA

Estimated Annual Cost of Continuing Program	$9,000,000
Allocation for FY 2000	9,000,000
Allocation Requested for FY 2001	13,500,000
Allocation for FY 2001 (House $9.0 m; Senate $8.0 m)	8,000,000
Allocation Requested for FY 2002	**8,000,000**

JUSTIFICATION: The Water Resources Development Act of 1996 (WRDA 96), Section 237. HOPPER DREDGES, contained a provision requiring the Corps hopper dredge WHEELER to be placed in a ready reserve status. The section requires that no individual project funds may be used to fund the dredge in its ready reserve status unless the dredge is specifically used in conjunction with a project. Previously the costs for operation of the WHEELER have been reimbursed from project funds from the Operations and Maintenance General appropriation, and subsequently charged to the Harbor Maintenance Trust Fund account as eligible navigation costs subject to reimbursement. In FY 98, the WHEELER was placed in a ready reserve status as required by the above referenced section of WRDA 96. Operations and Maintenance, General funds were used to fund the dredge, when it was not performing either emergency dredging or training exercises on individual projects in its capacity as a backstop hopper dredge.

APPLICATION: The hopper dredge WHEELER, in a ready reserve status, is required to be able to perform emergency dredging work, but may not be assigned any scheduled hopper dredging work. The dredge may be placed in an active status in order to perform work that private industry fails to submit a responsive or responsible bid for advertised dredging, or where industry has failed to perform under an existing contract. In light of this criteria, the WHEELER is being kept at the dock, with sufficient crew to respond to any unforeseen requirement within 72 hours, and be able to work for approximately 3 continuous weeks. The dredge is being maintained in a fully operational state and periodically will perform routine dredging operations to test equipment and keep the crew trained and prepared. The WHEELER performs approximately 55 days of training during the year. The WHEELER's operations cost for training days are charged to the project and not included in the requested amount, since maintenance dredging is performed during the exercise. In FY 98, FY 99, and FY 00 the WHEELER was called out of ready reserve status to perform urgent dredging to assist industry dredges in restoring navigation channels and waterways.

APPROPRIATION TITLE: Operation and Maintenance, General -- **Fiscal Year 2002**

1. Navigation

a. Channels and Harbors

Dredging Operations and Environmental Research (DOER) Program

SUMMARIZED FINANCIAL DATA

Estimated Ten-Year (FY 1997-2006) Program Cost	$ 48,000,000
Allocation Requested for FY 2002	7,000,000
Balance to Complete after FY 2002	17,856,000
Allocation for FY 2001	7,000,000
Increase of FY 2002 over FY 2001	0

JUSTIFICATION:

The last comprehensive research effort on contaminated sediments and dredged material management was completed in 1978 under P.L. 91-611. The Water Resources Development Acts of 1986, 1988, 1990, 1992, 1996, and 1999 contained provisions addressing contaminated sediments in navigation channels, dredged material management, and beneficial uses. Contaminant detection limits are now so low that sub-trace levels of toxic substances are identified. High profile contaminants such as dioxin continue to plague numerous Federal and permitted dredging projects. Traditional upland disposal areas have reached or are reaching capacity and are becoming scarce. Aquatic placement is under increased scrutiny and litigation with correspondingly increased costs. The continued economic viability and national defense of the Nation will depend upon our ability to remove, manage and beneficially reuse dredged material in a cost-effective and environmentally responsible manner.

The DOER Program is an integral and highly beneficial component of the Corps navigation dredging and environmental protection missions. Dredging and disposal must be accomplished within a climate of increased dredging workload, fewer placement sites, environmental constraints, and decreasing fiscal and manpower resources. Balancing environmental protection with critical economic needs while accomplishing dredging activities is a major challenge.

DOER products are designed to address issues impacting our ability to maintain a safe, reliable, environmentally sustainable and economically efficient navigation system. The program has validated candidate-screening methods for high profile contaminants that will significantly reduce testing costs at virtually all harbors. Methods for reuse of marginally contaminated sediments from upland disposal areas for beneficial purposes are key components of the program that will increase valuable capacity in traditional upland areas. Instrumentation for monitoring of dredges and the dredging process will improve efficiency in contracting and help meet environmental compliance obligations under the law. Assuring that seasonal restrictions on dredging are valid and technically justified will balance demands for lower costs, safety, and contractual efficiency while remaining sensitive to the needs of our ecological resources. Nearshore placement of suitable dredged material for maximum economic and environmental benefits is being demonstrated. Integration of economic and ecological risk factors with human health and ecological risk screening tools are major components of the DOER Program.

The DOER Program is producing technology that addresses operational, economic, and environmental risks of the Corps dredging program and will be conducted in full coordination and cooperation with other appropriate agencies and offices, such as the Environmental Protection Agency, National Marine Fisheries Service, US Fish and Wildlife Service, and state natural resource managers. Aggressive technology transfer and technology application will ensure that research products are integrated into decision making at Corps projects and made available to port authorities and other navigation project sponsors.

Research is performed in six areas to address the navigation dredging and environmental protection mission. Research area products are designed to address issues impacting our ability to maintain a safe, reliable, economically and environmentally sustainable efficient navigation system. These areas are:

1. Contaminated Sediment characterization, Management, Treatment, and reuse (reduce costs, increase options)
2. Dredge Instrumentation to Improve Efficiency (includes contract and environmental compliance)
3. Environmentally Sound Nearshore/Aquatic Placement of Dredged Material (in coastal, estuarine, and river waters)
4. Effective Environmental Windows for Dredging Operations (assure environmental sensitivity based on facts)
5. Cost-effective Application of Innovative Technologies (includes contracting and other dredging activities)
6. Environmental and Human Health Risk Assessment and Management for Dredged Sediments (factors economics, engineering, and ecological/human health risk).

The DOER Program is designed to produce a significant return on investment to the Corps dredging program. Benefits include environmental quality improvements through application of innovative technologies; cost-effective compliance with regulatory requirements for identifying, containing and reusing contaminated sediments; technology for beneficially placing dredged material in the nearshore or offshore zone; greater flexibility in dredging in sensitive ecological areas; and implementation of risk-based decision making.

FY 2002 ACTIVITY:

a. Results from the Nearshore Placement of Mixed Sediments research field validation, coupled with knowledge of the effects of chronic turbidity on fishery resources in the nearshore zone, will allow nearshore disposal of mixed grain sediments with a positive environmental effect.

b. Environmental windows (seasonal restrictions) negatively affect more than 80% of Civil Works navigation dredging projects. A final guidance document will be prepared reflecting results of studies evaluating various categories of impact and operational guidelines for negotiation of objectively determined windows with state and Federal natural resource agencies.

c. Guidance will be developed on bioremediation of contaminated sediment in traditional Confined Disposal Facilities (CDFs) for beneficial reuse of the dredged material. This guidance, coupled with solids separation for contaminant removal, phyto-reclamation of contaminants and treatment technologies will provide the field with a powerful suite of new technologies for managing existing CDFs for beneficial reuse and extending the life of a CDF.

d. Complete human health and ecological screening level risk assessment that is an automated PC-based decision support tool for all dredged material disposal and management options. This will be leveraged with the ARAMS (Army Risk Assessment Modeling System).

e. Innovative (off the shelf) technologies that can be applied to Corps navigation projects will be pursued from all quarters. Alternatives to traditional dredging will be evaluated to determine the feasibility of extending periods between required channel maintenance. Innovative dredging and placement equipment, operations, and management techniques that will reduce costs, take less time, and are environmentally friendly will be high priorities.

f. Improvements in instrumentation will include a "Silent Inspector" for mechanical dredges for quality control and performance. This will replace more costly inspection and will be "real time." This will increase flexibility in scheduling inspectors and aid the incorporation of detailed performance measures into contracting instruments.

FY 2001 ACCOMPLISHMENTS:

a. Produced design procedures, construction methods, and costs for contaminant confinement technology (e.g., covers, dikes, liners) appropriate for confined disposal facilities receiving high risk dredged material. Incorporated risk assessment guidelines to establish the expected range of risk parameters for various designs.

b. Evaluated suitability of physical and contaminant separation technologies and developed equipment selection guidelines for separation of contaminated sediment components at Confined Disposal Facilities (CDFs). The highly contaminated fraction of dredged materials can be economically separated at CDFs, thus the remainder of the sediments can be made available for beneficial uses, freeing up valuable storage capacity.

c. Evaluated the suitability of innovative approaches to accomplish high risk dredging requirements in an economical manner. Numerous projects, such as bypassing large volumes of littoral materials in high-energy environments (e.g., at the Mouth of the Columbia River), establishing the feasibility of using dustpan dredging at the head of Southwest Pass on the Mississippi River for restoration of lost wetlands, and demonstrating deep-water capping of contaminated sediments are being accomplished using these innovative approaches.

d. Guidelines and specifications for an automated system for monitoring of location, status, and capacity for dredged material dump scows were developed. These unmanned containers are towed to a disposal site where the dredged material is to be placed. State and Federal agencies, including the Corps of Engineers, have available an automated information trail for each scow that includes: where it was loaded, the characteristics of the dredged material, the route from the dredging site to the disposal site, the precise location and duration of the disposal event, and the route by which the scow returns to the dredging project. Manually maintaining this audit trail is not practicable.

e. Sediment bioassay techniques that provide indications of chronic sublethal effects were field validated and will be transitioned for field office regulatory use.

f. Properties of fine-grained sediments have provided tools to improve predictions of dredged material disposal mound erosion. Algorithms and techniques developed have been used to develop remediation plans for PCB contaminated sites. These techniques have also been used to develop Draft Environmental Impact Statements (DEIS) for site approval for dredging projects in Providence, RI, and Wilmington, NC.

APPROPRIATION TITLE: Operation and Maintenance, General -- **Fiscal Year 2002**

1. NAVIGATION

a. Channels and Harbors

Dredging Operations Technical Support (DOTS) Program

SUMMARIZED FINANCIAL DATA:

Allocation Requested for FY 2002 (Continuing Program)	$ 1,500,000
Allocation for FY 2001	1,500,000
Increase of FY 2002 from FY 2001	0

JUSTIFICATION:

Maintaining the nation's navigation projects requires compliance with numerous complex environmental statutes and Presidential Executive Orders. Compliance with regulations using state-of-the-art ecotoxicological assessments is required. The Dredging Operations Technical Support (DOTS) Program fosters the one-door-to-the-Corps concept through providing comprehensive and interdisciplinary technology transfer, technology application, and necessary training at all Corps navigation dredging projects. DOTS is managed from a centralized program to maximize cost effectiveness and implement National policies, laws, and complex technical requirements on a consistent basis. The DOTS Program focuses on application of state-of-the-art technology and research results to field problems. Emerging scientific approaches sometimes cause uncertainty in administration of the Corps navigation dredging program. DOTS provides a consistent technology base and ready response to technical issues with technology transfer capability and generic technology application to other projects with similar problems. Short-term work efforts to address generic Corps-wide technical problems for maintaining navigable waterways are major features of the DOTS Program. Technology transfer of new and emerging techniques for application at Corps navigation maintenance projects is an important DOTS activity. In response to new research results and continuing staff reductions the DOTS program will continue to expand to provide technology transfer to all O&M navigation projects.

FY 2002 ACTIVITY:

Special emphasis will be placed on transfer of technology developed by the Corps and others that deal with maintenance and management of navigation structures and navigable waterways. Typical technology transfer topics include management of contaminated dredged material; application of innovative risk-based technologies to contaminated dredged material; maintenance of coastal inlets and adjacent shorelines; shoreline stabilization and river training activities; assessment and management protocols for beneficial uses of dredged material; channel realignments; protection of endangered species; equipment selection; rational application of dredging windows; lock and dam maintenance needs; channel and harbor maintenance activities; and ship simulation activities.

Training of Corps staff and others who have regulatory authority over Corps navigation maintenance activities will be conducted on the latest environmental and engineering techniques associated with maintaining navigable waterways, i.e., dredging and dredged material disposal and coastal and inland

channel maintenance needs; water quality and related aquatic environmental issues; technology transfer of new and emerging techniques used to determine compliance with environmental protection statutes regarding management of dredged material and other features of navigation projects; development and preparation of manuals jointly with EPA that implement the inland and ocean disposal programs; and short-term work efforts to address generic Corps-wide technical dredging and dredging material management problems and other technical problems at navigation projects.

FY 2001 ACCOMPLISHMENTS:

Maintenance and continued updating of the national bioaccumulation database continued to be critical to implementing the CE/EPA ocean and inland testing manuals for dredged material disposal. The database allows full and complete interpretation of the toxic substances uptake testing protocols of the Clean Water and Marine Protection, Research and Sanctuaries Acts. Technical questions, from Federal and state agencies and private concerns dealing with implementation of the inland and ocean testing manuals, continued to be addressed. The program reports ocean dumping activities to the EPA and the International Maritime Organization as required by the London Convention, 1972. The Program has conducted 17 sediment management seminars since 1991 that were attended by over 4,200 personnel from Corps districts, federal, state, and local agencies. Training continued to be provided on the latest state-of-the-science techniques in regulating, testing, and managing dredged material. DOTS continued to support the Corps Center for Contaminated Sediments that provides technology transfer on: 1) endangerment assessments, 2) risk analysis, 3) ecological habitat restoration, 4) remediation, and 5) management activities. The Program also continued to provide specific guidance for the assessment and protection of threatened and endangered species associated with navigation projects. A joint Corps/EPA task force continued updating the ocean disposal implementation manual with a view to combine it with the inland disposal implementation manual into one generic manual, bringing consistency in dredged material testing and management between the Clean Water and Marine Protection, Research and Sanctuaries Acts. The first draft of the Upland Testing Manual was published and will serve as a companion document to the inland and ocean manuals. The Environmental Residue and Effects Database (ERED) is being expanded to include upland plants and animals.

The Program annually makes available thousands of copies of navigation related technical manuals, bulletins, technical notes and reports and maintains a world wide web home page (www.wes.army.mil/el/dots) supporting, among other things, a complete information retrieval system for all relevant products related to regulating, maintaining, and managing the nations navigable waterways. The web page has been continually updated as more information becomes available. The web accessible literature database, E2D2, was expanded to include over 5000 documents. More recent additions can be downloaded full text from the web. The home page is also electronically linked to other relevant information sources to include the bioaccumulation interpretation database, ocean disposal database, the Environmental Effects of Dredging and Disposal database, etc., that contain world-wide references for use by operations project managers. The online web training now contains training modules on Basic Benthic Evaluations, Dredged Material Management and Dredging Regulations is being expanded to include additional modules on Risk Assessment, Sediment Sampling, and Geotechnical properties of dredged material. In addition the beneficial uses of dredged material web page is expanding in an attempt to document at least 90 percent of all beneficial use cases within the US.

APPROPRIATION TITLE: Operation and Maintenance, General -- **Fiscal Year 2002**

1. NAVIGATION

a. Channels and Harbors

Monitoring of Completed Navigation Projects

SUMMARIZED FINANCIAL DATA

Estimated Five-Year (FY2001-2006) Program Cost	$10,000,000
Allocation Requested for FY 2002	**1,700,000**
Balance to Complete Program after 2001	8,000,000
Allocation for FY 2001	1,700,000
Increase of FY 2002 over FY 2001	000
Average Annual Allocation for FY1996-2000	1,438,800

JUSTIFICATION:

The Army Corps of Engineers operates and maintains more than 800 navigation projects encompassing more than 25,000 miles of waterways. The Corps needs a national program to identify the best navigation project practices and use them to improve all navigation projects' performance. Optimizing projects' performance requires that they be monitored, evaluated against preconstruction projections and present needs, and the lessons learned translated into proactive management guidance for Corps Districts. Information gained from monitoring navigation projects, including changes in sediment transport, water levels, currents, waves, flushing, and other hydraulic phenomena with associated environmental impacts, will be used to verify design expectations, determine benefits, and identify operational and maintenance efficiencies. Information collected from monitored navigation projects can improve projects' performance and optimize opportunities for environmental enhancement. Information collected and analyzed on a national basis documents successful designs, disseminates lessons learned on projects with problems, and provides upgraded field guidance that will help reduce life-cycle costs on a national scale.

SCOPE:

A selective and intensive monitoring of Civil Works navigation projects is executed to acquire information to improve project purpose attainment, design procedures, construction methods, and operation and maintenance (O&M) techniques. Both shallow- and deep-draft navigation projects located in rivers, reservoirs, lakes, estuaries, and the coastal zone are included in this program. Projects that will potentially provide maximum life-cycle cost savings are identified and those that best address high-priority cost savings are selected for monitoring and evaluation. Monitoring plans are developed jointly by Corps of Engineers Districts and the US Army Engineer Research and Development Center (formerly Waterways Experiment Station). They consist of either a comprehensive detailed survey to verify post-construction conditions on a one-time basis or a repetitive collection of field data. The intensive data are analyzed and the results compared to the pre-construction predictions to verify or upgrade existing design guidance for minimizing O&M cost and assuring project benefits. The analyses include structural, topographic, and hydrodynamic responses and intercomparisons of projects when applicable. Reductions in program funding in recent years

have prevented starting new monitoring projects, including upper Mississippi River training structures and navigation project features at Tedious River, MD, and Tom Bevill Lock and Dam, AL.

FY 2001 ACCOMPLISHMENTS:

The Ocean Dredged Material Disposal Site (ODMDS) at the mouth of the Columbia River, WA/OR was evaluated for the causes of disposed dredge material extending beyond the designated ODMDS limits and adverse wave conditions believed to be the result of shoaling over the disposal mound. Monitoring the performance of CORE-LOC armor units at Ventura Harbor breakwater, CA, was completed. The Morro Bay, CA, entrance channel physical and numerical model predictions of hydrodynamic conditions and sedimentation phenomena were validated for use as design tools. Monitoring continued at Marseilles Lock and Dam, IL, to determine if the remote operating system is maintaining pool levels within tolerances, to determine if the submersible tainter gates are effective in passing ice, and to quantify vibration conditions for flows over and under the gates. Monitoring continued at Boston Harbor, MA, to determine if confined aquatic disposal cells (located within the existing Federal channel limits) are a viable alternative for placement of dredged maintenance material not suitable for unconfined ocean disposal. Monitoring of upper Mississippi River training structures was initiated to study optimal riverine hydrodynamics and sediment transport processes for minimizing dredging. Monitoring of the St. Paul Harbor breakwater, AK, also was completed. Multiple technical reports, including one on stone degradation on coastal structures and another on monitoring of Barnegat Inlet, NJ, were published. Additionally, a Coastal Engineering Technical Note summarizing lessons learned from completed projects was published and disseminated to the field through meetings, mailings, and web-based distribution. Reductions in required funding in previous years adversely impacted the project monitoring. Had funds been available, monitoring results from the upper Mississippi River training structures would currently be available. In addition, monitoring of navigation improvements at Tedious Creek, MD, and Tom Bevill Lock and Dam, AL, would have been initiated.

FY 2002 ACTIVITIES:

Additional Coastal and Hydraulic Engineering Technical Notes will be published and disseminated to the field immediately with improved/corrected design guidance. Technical Reports regarding findings and conclusions of periodic inspections of coastal structures previously monitored by this program will be published. The periodic data sets will be used to improve understanding in the design, construction, and maintenance of both existing and future structural projects, and will help avoid past design deficiencies that failed and/or resulted in high maintenance projects. Concrete armor units (dolos, tribars, etc) protecting the Kahului and Nawiliwili Harbor breakwaters, HI, will be monitored and evaluated. An analysis of bathymetric data at Morro Bay entrance channel, CA, will be completed to understand the mechanisms by which filling of the entrance channel occurs so that preventive measures can be formulated. This study will also validate the accuracy of the design procedures used in determining the sediment budget at this site, results of which will then be extrapolated to other sites. Conclusions will be formulated from monitoring of Marseilles Lock and Dam, IL, and Boston Harbor, MA. Monitoring of Tedious Creek, MD, will be initiated to validate expected hydrodynamic, sedimentation, and geotechnical conditions at the site. The Tom Bevill Lock and Dam, AL, will be monitored to evaluate river flows in the upper lock approach and alternatives that may alleviate adverse cross-current conditions. Corps of Engineers field offices will nominate additional monitoring sites that continue the process of improving project performance and realizing cost savings.

APPROPRIATION TITLE: Operation and Maintenance, General -- **Fiscal Year 2002**

COORDINATION:

Coordination between the Corps of Engineers and other Federal, state, and local agencies is essential for proper accomplishment of this program. In addition to satisfying Corps of Engineers requirements, the data are made available through publications and will be of value to local, State, and other Federal agencies tasked with the development and implementation of regional coastal and inland navigation management policies. Results are communicated to member agencies of the Marine Transportation System (MTS) committees.

APPROPRIATION TITLE: Operation and Maintenance, General -- **Fiscal Year 2002**

1. NAVIGATION

b. Locks and Dams

Aquatic Nuisance Control Research

SUMMARIZED FINANCIAL DATA:

Estimated Program Cost	$ 14,348,000
Allocation for FY 2001	700,000
Allocation Requested for FY 2002	700,000
Balance to Complete After FY 2002	2,500,000
Increase of FY 2002 Over FY2001	0

JUSTIFICATION:

This is an expansion of the existing Zebra Mussel Research Program (ZMRP). The expanded program will address all invasive species except for aquatic plants. Invasive species cost the public over $11B annually. The Corps of Engineers is responsible for the construction, operations, and maintenance of navigable waters and the resources associated with it. Zebra mussels alone cost the public over $1B annually. The zebra mussel (Dreissena polymorpha), first reported in the United States in 1988, was accidentally introduced from Northern Europe via ballast water from ocean-going vessels. It is estimated that over 100 species are introduced into US waters annually which can impact facility operations and threaten valued natural resources. Methods of prevention and more effective, inexpensive methods of control of invasive species must be developed to prevent impacts to public facilities and protect valuable natural resources.

The Zebra Mussel Research Program (ZMRP) is the only Federally funded R&D program directed at control of zebra mussels and their effects on public facilities. The ZMRP is authorized by the Nonindigenous Aquatic Nuisance Prevention and Control Act of 1990 (PL 101-646). The research program must be expanded to address all invasive aquatic species that impact the nations' waterways infrastructure and associated resources. Methods for prevention, control, and restoration of natural resources will be developed. Prevention methodology focusing on dispersal barrier technology will be developed. The development of strategies to apply control methods involves engineering design, operations, and maintenance of facilities and structures. Control strategies are being developed for (a) navigation structures; (b) hydropower and other utilities; (c) vessels and dredges; and (d) water treatment, irrigation, and other water control structures. Invasive species is the second leading cause of endangered and extinct species and loss of habitat. Methods to reduce invasive species impacts and restore natural habitat will be investigated. MAJOR ACCOMPLISHMENTS OF THE 2001 PROGRAM:

1. Strategic management options were developed that will assist planners and biologists deal with moderate to high-level zebra mussel infestations. Work areas will include: 1) Environmental problems associated with electrical, chemical, hydraulic, and regulatory barriers used to restrict zebra mussels; 2) Methods to reduce impact of zebra mussels to federally-listed endangered species; 3) Methods to modify hydraulic structures (culverts, piping systems, intake structures) to reduce zebra mussel settlement; and 4) Procedures for inspecting equipment that is moved across state lines that could harbor nonindigenous species.

2. Develop method to characterize zebra mussel genome. This information will allow for investigations on a macro-scale and on selected micro-scales a comprehensive understanding of the genetic relatedness of zebra mussel clads. Canonical correlation's of phylogeographic zebra mussel distributions to physical and biological characteristics of the systems will be used to identify range-limiting factors for zebra mussels at both the micro- and macro-scales. These studies will allow planners to predict precisely the geographical range of zebra mussel's colonization which will mean a tremendous savings in resources by directing research and control efforts only to those areas susceptible to infestation.

3. The Zebra Mussel Information System (ZMIS) is a comprehensive interactive information system for facility managers, researchers, industry, and educators. It is the state-of-the-art expert system that allows the user to ask questions pertaining to zebra mussel control strategies and prevention technologies based on type of facility and or habitat at risk. The second generation of the ZMIS system was produced and placed on the Internet for wide spread public access.

PROPOSED MAJOR ACTIVITIES OF THE 2002 PROGRAM

Many or the accomplishments of the ZMRP will be expanded to address all invasive species (i.e. Zebra Mussel Information System expanded to Invasive Species Information System, Zebra Mussel Engineering Management Guide will be modeled for other invasive species engineering guides.)

1. Technology is required to prevent the spread of zebra mussels and other invasive species into un-infested watersheds and river basins. The threat of zebra mussels in the St. Croix River could result in the shut down of commercial navigation in reaches of the upper Mississippi. Dispersal barrier technology and methods to prevent tow traffic dispersal must be developed to protect valuable river ecosystems and maintain commercial traffic in these areas. The spread of zebra mussels in the remaining two thirds of the U.S. will result in billions of dollars annually to the public. Methods including acoustical, UV light, pulse power plasma sparkers, hydraulic barriers, shape burst thermal treatment, etc. will be applied in barrier configurations in channels and on tow vessels to demonstrate effective barriers and removal from vessel surfaces.

2. Canonical correlation's of phylogeographic zebra mussel distributions to physical and biological characteristics of the systems will be used to identify range-limiting factors for zebra mussels at both the micro- and macro-scales. These studies will allow planners to predict precisely the geographical range of zebra mussel's colonization which will mean a tremendous savings in resources by directing research and control efforts only to those areas susceptible to infestation.

3. Molluscivores (fish that consume mussels) have the potential to effectively control invasive mollusks such as Corbicula and zebra mussels. In some regions of the U.S., native molluscivores, (e. g., catfishes, freshwater drum, redear sunfish) have substantially reduced Corbicula populations. However, the benefits of molluscivore predation have rarely been considered in predicting impacts of zebra mussels. A study is being conducted to compare the degree of molluscivore predation among lakes with different densities of zebra mussels. In cooperation with state and federal agencies, a comprehensive database will be developed on zebra mussel densities, molluscivore densities and growth, water quality, and other pertinent habitat attributes. Statistical evaluations will be made among these variables to construct models predicting the effects of molluscivores on zebra mussel infestations and subsequent changes in habitat quality. These models will quantify the beneficial aspects of predation on zebra mussels, assist in impact prediction, and aid in allocation of control efforts. Secondary benefits will include information on population dynamics of native molluscivores in waterbodies infested by zebra mussels. This study will directly contribute to formulation of integrated control strategies to reduce or eliminate zebra mussels, and indicate the potential for long-term biological control by native fishes.

4. Risk assessments will be conducted to determine potential impact to facilities and associated natural resources by new invading species. This information will allow the Corps to focus efforts on species and issues that present the greatest risk to the inland waterways infrastructure and natural resources.

APPROPRIATION TITLE: Operation and Maintenance, General -- **Fiscal Year 2002**

2. FLOOD CONTROL.

Cultural Resources (NAGPRA/Curation)

SUMMARIZED FINANCIAL DATA

Estimated Total (FY 1994 - 2010) Program cost	$44,000,000
Allocation Requested for FY 2001	3,000,000
Allocation for FY 2001	1,500,000
Allocation Requested for FY 2002	**1,500,000**
Balance to complete after FY 2002	41,500,000

JUSTIFICATION:

The Native American Graves Protection and Repatriation Act (NAGPRA) contains data gathering, reporting, consultation, and permitting provisions that have near-term and long-term implications for Civil Works programs and projects. A Mandatory Center of Expertise (MCX), located at the St. Louis District, has been established to provide overall management of the Corps NAGPRA programs and will serve as an information source and a centralized base for curation compliance and contracting. The MCX will facilitate the assurance of consistent nationwide program implementation and operation. In addition, the Corps is responsible for the curation of 46,255 cubic feet of artifacts collected from its water resources development projects and 3,511 linear feet of associated records. Curation of these materials, the largest volume of all DoD agencies responsible for this activity, is required by a number of public laws. Corps collections represent over 80% of the total DoD collections.

BACKGROUND:

Enacted on 16 November 1990, NAGPRA is a complex piece of legislation that addresses the recovery, treatment, and repatriation of Native American and Native Hawaiian cultural items by Federal agencies and museums. As defined by the Act, cultural items are human remains, associated funerary objects, unassociated funerary objects, sacred objects, and objects of cultural patrimony. In FY 1994, the Corps of Engineers began the process of inventorying human remains and associated funerary objects and completing summaries as mandated by the legislation. In addition, the Corps has been responsible for curation of cultural resource materials collected from its water resources development projects. These collections are extensive and are located at a variety of curation facilities across the nation. The costs are to accomplish NAGPRA work and to fund MCX curation support to the districts. The MCX, in providing NAGPRA inventories, will assist in establishing the extent of Corps holdings. Associated with efforts to complete NAGPRA, the MCX is beginning the process of effectively managing the Corps curation efforts.

APPROPRIATION TITLE: Operation and Maintenance, General -- **Fiscal Year 2002**

MAJOR FEATURES IN THE FY 2002 PROGRAM:

The MCX and certain Corps field offices will continue the process of inventorying Native American and Native Hawaiian human remains and associated funerary objects and complete summaries of unassociated funerary objects, sacred objects, and objects of cultural patrimony as mandated by the legislation. Information will be made available to interested individuals and groups through notices in the Federal Register. Through MCX-provided funding, districts will continue to be engaged in formal consultation with tribes and organizations for the legislated purpose of repatriating cultural objects for which there are legitimate claims. The MCX will continue to fulfill its chartered activities in support of other military services and DoD as well as serving in the pivotal role of assisting in the development and implementation of an agency-wide, long-term plan for the curation of USACE archeological collections (heritage assets). The MCX will also continue to work closely with USACE commands on the implementation of final guidelines and procedures for field collection of archeological materials and the long-term treatment of those collections. In this regard, the MCX will act as a source of expertise for processing and rehabilitation of USACE collections. Finally, the MCX will provide leadership in the development of a training curriculum on the treatment of heritage assets and working in consultation with all stakeholders, take initial steps to make this training available to USACE and other appropriate DoD managers and decisionmakers.

FUNDING PROFILE:

	FY 2001	**FY 2002**
(a) NAGPRA Compliance	$1,500,000	$1,500,000
(b) Processing & Rehabilitation of USACE Collections(Curation)	$0	0
TOTAL	$1,500,000	$1,500,000

APPROPRIATION TITLE: Operation and Maintenance, General -- **Fiscal Year 2002**

2. FLOOD CONTROL.

National Dam Safety Program

SUMMARIZED FINANCIAL DATA

Continuing Program Annual Cost	$40,000
Allocations for FY 2001	40,000
Allocation requested for FY 2002	**40,000**

JUSTIFICATION: The Federal Guidelines for Dam Safety provides a framework for the safe construction, operation, and maintenance of USACE dams. Dams in the United States must be constructed, operated, and maintained in accordance with sound engineering practices to prevent failure and avoid potential loss of life and destruction of property. The National Dam Safety Program (NDSP) has been established to enhance national dam safety. These funds support the activities under the aegis of the NDSP, in the interests of the USACE and the citizens of the nation.

BACKGROUND: The National Dam Safety Program Act (Section 215 of Public Law 104-303) strengthens the NDSP, whose purpose is to reduce the risks to life and property from dam failure in the United States. The Act also codified the Interagency Committee of Dam Safety (ICODS) to coordinate the Federal actions under the National Dam Safety Program. The Chief, Engineering and Construction Division, Directorate of Civil Works, represents the Department of Defense as a member of ICODS. USACE also provides a representative to the National Dam Safety Review Board. The National Dam Safety Program Act expanded the scope of previous dam safety legislation (P.L. 92-367, and P.L. 99-662) and the requirements for ICODS participation with the various states to improve dam safety in the United States. Through ICODS, the NDSP provides support in development of federal guidelines for dam safety, promotion of public awareness programs, publications, training materials, and workshops. The Act also provides for archival research, which is supported by the Federal dam owning agencies through ICODS and the National Performance of Dams Program.

APPROPRIATION TITLE: Operation and Maintenance, General -- **Fiscal Year 2002**

2. FLOOD CONTROL.

National Dam Security Program

SUMMARIZED FINANCIAL DATA

Estimated Annual Cost for Continuing Program	$40,000
Allocations for FY 2001	25,000
Allocation Requested for FY 2002	**25,000**

JUSTIFICATION: The National infrastructure in the United States, including dams, is becoming an increasing target of terrorist threats. Additional security, training, and preparedness are required to guard against terrorist activity and to avoid potential catastrophic loss of life and destruction of property.

BACKGROUND: In recognition of these increasing terrorist threats, Executive Order 13010 - Critical Infrastructure Protection, and Presidential Decision Directives (PDD) 62 and 63 were issued. The Interagency Committee on Dam Safety (ICODS) has identified terrorism as one of the major threats to dams in the United States. Of all the agency members of ICODS, the Department of Defense acting through the U.S. Army Corps of Engineers has the most unique and in-depth knowledge in the area of antiterrorism program development and execution. This program uses the Army's experience in antiterrorism planning and building design as the basis for developing a program for safeguarding the Corps of Engineers dams. Training under this program is designed for the dam operator and field manager in order to improve their awareness of potential threats and to establish lines of communications to minimize damage if and when a threat is received. The program will also provide for the exchange of information on threats received and the establishment of a database to review trends in the pattern of threats. Through coordination with ICODS and the Interagency Forum on Infrastructure Protection (IFIP), this program will assist in the development of interagency guidance related to the security of dams and appurtenances. In FY01 the IFIP, (with USACE membership), will test, finalize and publish a standardized methodology for conducting a vulnerability and risk assessment of dams and related energy transmission systems. In FY02 USACE will use the methodology to begin assessments of its 74 hydroelectric projects.

APPROPRIATION TITLE: Operation and Maintenance, General -- **Fiscal Year 2002**

2. FLOOD CONTROL.

National Lewis and Clark Commemoration Coordinator

SUMMARIZED FINANCIAL DATA

Estimated Total (FY 2002 - 2008) Program cost	$ 1,800,000
Allocation Requested for FY 2001	300,000
Allocation Requested for FY 2002	**300,000**
Balance to complete after FY 2002	1,500,000

JUSTIFICATION:

The bicentennial commemoration of the Lewis and Clark Expedition is a significant nationwide event. It is imperative that activities regarding this event at all levels of the Corps be coordinated. The nature of this event will involve large numbers of the public traveling through numerous Corps local jurisdictions. The Lewis and Clark Coordinator is responsible for ensuring consistent agency wide information on safety, traversing navigation structures (locks), historic facts, and the geographic location of the Expedition's route. The Coordinator is also responsible for a consistent agency position in coordination activities with the large number of states, local communities and tribes planning local events either on or in close proximity to Corps projects.

BACKGROUND:

The bicentennial commemoration of the Lewis and Clark Expedition will begin in 2003 and will continue through 2006. A National Bicentennial Council has been established; Federal, State, Tribe, and local governmental entities are planning the roles they will play in the commemoration. Political interest has also rapidly increased. Of the more than 5,000 miles of trail from Washington D.C. to the Pacific Ocean, the U. S. Army Corps of Engineers directly or indirectly manages nearly 4,700 river miles, thus managing more of the trail than any other entity. By virtue of its role as administrator of large stretches of public land along the trail route, and its Army heritage of exploring and mapping of the western United States, the Corps will play a significant leadership role in the observance of the Lewis and Clark Expedition Bicentennial.

MAJOR FEATURES IN THE FY 2002 PROGRAM:

1. Develop funding sources. (Develop partnerships with groups such as Association of the US Army. Use Challenge Partnership Program to develop potential partners. Seek out new and different funding sources (National Endowment for the Humanities, etc). Establish more partnerships with cooperative associations. Seek ways to accept corporate donations and other non-traditional types of funding. Seek financial assistance to support activities, facilities, and other identified needs.) 2. Build partnerships. (Establish contacts with BIA and Tribal government designees. Develop a strategy for tribal involvement. Establish contacts with State Governor’s committees. Coordinate proposed Corps/Army efforts with other agencies. Work with state recreation and tourism initiatives to market this opportunity for cultural tourism. Work with Native Americans to ensure their story is interpreted according to their traditions. Identify tasks that could be co-sponsored or co-produced.) 3. Improve facilities and interpretation. (Work with private and public organizations to improve public access and

recreation infrastructure. Implement actions identified in management plans. Develop strategy for participation in reenactment activities (i.e., rendezvous, demonstrations, costumed interpretation) and festivals.) 4. Implement plans for Bicentennial activities. (Coordinate with commercial entities. Coordinate volunteer efforts.)

APPROPRIATION TITLE: Operation and Maintenance, General -- **Fiscal Year 2002**

2. FLOOD CONTROL

Recreation Management Support Program (RMSP)

SUMMARIZED FINANCIAL DATA

Estimated Annual Cost for Continuing Program	$4,600,000
Allocation Requested for FY 2001	1,950,000
Allocation for FY 2001	1,500,000
Allocation Requested for FY 2002	1,500,000
Increase of FY 2002 from FY 2001	0

AUTHORIZATION: This program is conducted under the general authority of PL 78-534, the Flood Control Act of 1944 (58 Stat. 887)

JUSTIFICATION: The recreation program serves over 375 million recreation visitors and generates over $34 million in revenue annually. Visitors spend over $12 billion annually to engage in recreation at Corps projects; over 600,000 full and part time jobs are associated with this spending. The RMSP supports the recreation program through the management of the National Recreation Reservation Service, the conduct of focused management studies to improve operational efficiencies, and the provision of technical assistance to include technology transfer and technology support and maintenance for recreation specific automated information systems. The RMSP supports strategic planning for and performance monitoring of the Corps recreation business program, pursuant to the requirements of the Government Performance and Results Act (GPRA).

MAJOR FEATURES:

1. National Recreation Reservation Service (NRRS). In cooperation with the Forest Service, the Corps operates a centralized reservation service, using a toll free telephone number and an Internet Website, for recreation facilities on Forest Service and Corps lands. Funds from RMSP are used to support the operation of the NRRS, including implementation activities and technical assistance. The NRRS provides one-stop, comprehensive reservation services for recreation customers of the Corps and Forest Service.

2. Support to Recreation Program Strategic Planning. Funding to support the activities of the Recreation Leadership Advisory Team. The Team is composed of representatives from the division, district and project levels of the Corps natural resources management program. It provides input, advice and support to the Corps strategic planning for the recreation business program.

APPROPRIATION TITLE: Operation and Maintenance, General -- **Fiscal Year 2002**

	FY 01	FY 02
NRRS Allocation	$800K	$1,300K
Focused Mgt Studies Allocation	$600K	0
Technical Assistance Allocation	$100K	0

APPROPRIATION TITLE: Operation and Maintenance, General -- **Fiscal Year 2002**

2. FLOOD CONTROL

Water Operations Technical Support (WOTS) Program

SUMMARIZED FINANCIAL DATA:

Estimated Annual Cost for Continuing Program	$2,000,000
Allocation for FY 2001	$ 700,000
Allocation Requested for FY 2002	$ 700,000
Increase of FY 2002 from FY 2001	$ 0

JUSTIFICATION:

Maintaining the environmental and water quality conditions at 562 reservoirs (5.5M surface acres), 237 navigation locks, 962 harbors, 75 hydropower projects, and 25,000 miles of inland and coastal waterways impacted by the operation of Corps projects requires compliance with numerous statutes and state standards. Providing the technology and knowledge base necessary to address the general non-project specific environmental and water quality needs of project operations can best be accomplished through a comprehensive centralized program that will maximize cost effectiveness, and ensure broad dissemination and implementation of technology and information.

MAJOR FEATURES:

The WOTS Program provides effective environmental and water quality engineering technology to address a wide range of water resource management problems at Corps reservoir and waterway projects, and in the river systems affected by project operations nationwide. The program provides technology to address problems occurring from the presence of Zebra Mussels and other non-indigenous aquatic species; tailwater fisheries at pump-back hydropower projects; water quality impacts of land use, erosion, and reservoir sedimentation; and project operations related to environmental and water quality issues.

WOTS provides technical support to the Corps' mission related project responsibilities, with special emphasis on the transfer of technology. The program ensures that the technologies developed by the Corps and other Federal agencies are current and readily available to all Corps field offices. The effective use of technologies is secured through field demonstrations, specialty workshops, publication of information bulletins, technical notes, executive notes, technical reports, miscellaneous papers, instruction reports, videos, meetings, seminars, briefings at field offices, congressional testimony, and the Internet.

ACCOMPLISHMENTS:

Since its inception in FY 1985, WOTS has provided environmental and water quality technological solutions to over 1,000 problems identified at projects from every Corps District. The program annually publishes and distributes numerous copies of manuals, bulletins, notes, and reports. WOTS annually conducts specialty workshops, training personnel on the latest environmental and water quality management techniques. In FY 2000, the WOTS program successfully

responded to 20 direct technical assistance requests from 12 Corps Districts, conducted 6 technology demonstration efforts to verify management strategies and techniques, 4 training workshops on environmental and water quality management techniques, and prepared 10 technical publications for distribution to the field.

A continual endeavor of the WOTS program is coordination with water quality elements of other Federal agencies such as the Environmental Protection Agency, Tennessee Valley Authority, Bureau of Reclamation, Fish and Wildlife Service, Geological Survey, and the Bonneville Power Administration. These efforts have involved watershed management activities, problems related to the spread of Zebra Mussels, the impacts of hydropower facilities, and cold water releases in tailwater areas on fisheries.

APPROPRIATION TITLE: Operation and Maintenance, General -- **Fiscal Year 2002**

4. PROTECTION OF NAVIGATION

Dredging Data and Lock Performance Monitoring System

SUMMARIZED FINANCIAL DATA:

Estimated Annual Cost for Continuing Program	
Allocation for FY 2001	$1,000,000
Allocation Requested for FY 2002	$1,000,000

AUTHORIZATION: These efforts are necessary to provide data for efficient management of Congressionally authorized navigation projects, as well as to respond to specific public laws, including P.L. 96-269 (Minimum Dredge Fleet) and P.L. 100-656 (Small Business Set-Aside).

JUSTIFICATION:

a. Ongoing tasks include multi-year analysis of dredging costs and quantities for previous, current and future Fiscal Years, including both new work and maintenance dredging performed by the Corps and commercial dredging industry. Analysis includes nationwide and regional trending of dredging cost and quantity data. Funding also supports the management, enhancement, operation and maintenance of the Dredging Information System (DIS) which contains dredging data on all Corps performed and contracted dredging of Federal projects. The DIS is a transactional system within the Operations and Maintenance corporate information system. The DIS data includes advertising schedules, contract award and completion data (actual quantities dredged, cost, type dredge used, etc.). The Dredging Information System is an interactive on-line system with District data input directly into the central database and is immediately available for output reports. Reports and data are accessible Corps-wide via the Corps intranet and biweekly updated reports are disseminated to the public via the World Wide Web. The Dredging Statistics Program, which manages the DIS, has been successful in rapidly addressing all dredging data requests from Corps and other customers. These funds include appropriate software and hardware upgrades, user assistance and training, and implementation of program performance measures. The DIS is a feeder system to the Corps performance based budgeting.

b. **Performance Monitoring System (LPMS)**: The Lock Performance Monitoring System provides operational and strategic management data and performance measures for the Corps navigation projects and program. The funds cover salaries, quality control, database management, software and hardware upgrades, user assistance, and CEEIS network services for the Corps nationwide program. This also includes funding for lock characteristics, decision support systems and project database development. These data systems are both transactional systems within the Operations and Maintenance corporate information system. Items 1a (DIS) and 1b (LPMS) are reported under OMBIL-Plus in ITIPS totaling $450,000 of the overall OMBIL-Plus cost.

c. **Future National Dredging and Port Requirements**. To maintain the nation's Federal navigable waterways, approximately 210-265 million cubic yards of material are dredged in the United States annually. Technological change in the shipping industry is a continual process requiring ongoing efforts to adequately plan for future maintenance dredging activities. Update of current and future needs using the Dredging Needs Database on vessel characteristics, channel dimensions, and commodity origins-destinations and other cargo data is needed to support the Corps maintenance dredging program. Tasks include the annual update of the world fleet composition and forecasts; analysis of current and projected commodity and traffic flows and trade patterns; analysis of characteristics of

vessels routing through Corps channels including identification and compilation of the types and sizes of various design vessels (design draft and beam) associated with maintaining Corps projects; analysis of current dredging practices including determination of underkeel clearances; and identification of those harbors and channels with the greatest safety and piloting problems.

APPROPRIATION TITLE: Operation and Maintenance, General -- **Fiscal Year 2002**

4. PROTECTION OF NAVIGATION

(Four Items)

SUMMARIZED FINANCIAL DATA:

Estimated Annual Cost of Continuing Program	$
Allocation for FY 2001	$ 5,125,000
Allocation Requested for FY 2002	$ 5,125,000

JUSTIFICATION: The budget estimate provides for carrying out the following work:

a. **Protection, Clearing, and Straightening of Channels**

Section 3 of the 1945 River and Harbor Act (as amended by Section 915 (g) of the 1986 Water Resources Development Act) provides continuing authority for limited emergency clearing of navigation channels not specifically authorized by Congress. A limit per project is not specified; however, in any given year, a maximum of $1,000,000 may be used nationwide. Work pursuant to this authority is undertaken as emergency measures to clear or remove unreasonable obstructions to navigation in navigable portions of rivers, harbors and other waterways of the U.S., or tributaries thereof, in order to provide existing traffic with immediate and significant benefit. The amount requested is an estimate based on historical experience. If actual requirements are more than estimated, funds will be reprogrammed to meet demonstrated needs.

b. **Removal of Sunken Vessels**

Removal of sunken vessels, or other similar obstructions, is governed by Sections 15, 19, and 20 of the River and Harbor Act of 1899, as amended. Primary responsibility for removal belongs to the owner, operator, or lessee. If the obstruction is a hazard to navigation and removal is not undertaken promptly and diligently, the Corps may obtain a court judgement requiring removal, or remove the wreck and seek reimbursement for the full cost of removal and disposal. Determinations of hazards to navigation and Federal marking and removal actions are coordinated with the Coast Guard in accordance with a memorandum of understanding between the two agencies dated 16 October 1985. Removal procedures are outlined in 33 CFR 245. If removal requirements are more than estimated, funds will be reprogrammed to meet actual needs.

c. **Waterborne Commerce Statistics**

The USACE serves as the Federal Central Collection Agency, and is the sole U.S. Government source, for U.S. domestic and foreign (U.S. foreign statistics mission transferred to USACE from Census in FY 1999) waterborne commerce and vessel statistics in conformance with the River and Harbor Act of 1922 as amended. Activities supporting this national statistics mission include: (1) collecting and reporting (includes enforcement role) of water transportation statistical data; (2) automated systems development and operation (transactional systems within Operations and Maintenance corporate information system), processing, compiling, and publishing (monthly, quarterly, and annually) statistical data and information on waterborne commerce and vessels moving on the internal U.S.

waterways, the Great Lakes, and through all U.S. ocean channels and ports; and (3) compiling and publishing the official U.S. documentation of U.S. vessels engaged in commerce, their principal trades and zones of operation. The data provide essential information for navigation project investment analyses, including accurate benefit-cost analyses; annual funding prioritization for operations and maintenance of existing projects; for computation of performance measures; for input into the U.S. National Accounts; and for regulatory and emergency management decisions. This item is reported under OMBIL-Plus in ITIPS and is $1,300,000 of the total OMBIL-Plus cost.

d. **Harbor Maintenance Fee Data Collection**

Public Law 103-182 authorizes up to $5 million to be used annually for the administration of the Harbor Maintenance Trust Fund. Most of these funds are used by Customs. The Corps is required to collect data on domestic and foreign shippers of waterborne commerce subject to the Harbor Maintenance Tax (HMT) and provide it to Customs for enforcement. Analysis of Harbor Maintenance Trust Fund (HMTF) revenues and transfers is required to validate the adequacy of the HMTF in light of the uncertainty over the legal and international challenges to the HMT, and to document the operation of the trust fund in the *Annual Report to Congress*. Analysis of waterborne commerce shipments and vessel movement data is also needed to respond to legal questions to the HMT. Therefore the Corps requires a portion of the administrative funding. The recent transfer of the Foreign Waterborne Transportation Statistics Program to the Corps will require the data processing system to be expanded to include validation of users engaged in foreign trade, in addition to domestic users. Requested funds are needed to operate and enhance the system to analyze, enforce, collect and validate harbor usage information required by the Customs Service for auditing HMT collections.

FUNDING PROFILE

	FY 2001	FY 2002
(a) Protection, Clearing, and Straightening of Channels	$ 50,000	$ 50,000
(b) Removal of Sunken Vessels	$ 500,000	$ 500,000
(c) Waterborne Commerce Statistics	$4,000,000	$4,000,000
(d) Harbor Maintenance Fee	$ 575,000	$ 575,000

5. **NATIONAL EMERGENCY PREPAREDNESS PROGRAM (NEPP)**

SUMMARIZED FINANCIAL DATA:

Estimated Annual Cost of Continuing Program	$6,000,000
Allocation Requested for FY 2001	4,000,000
Allocation Requested for FY 2002	4,000,000
Increase of FY 2001 over FY 2001	0

JUSTIFICATION:

The budget request will enable the Corps of Engineers to be prepared to accomplish its continuity of operations and continuity of government responsibilities during national/regional crises. This entails support of civil government through coordinated execution of federal agency plans and the planning/conducting of limited exercises to test readiness to provide such support. The cited executive directives assign significant responsibilities for such preparation (planning, training, research and testing) to the Corps of Engineers. This includes responsibility for development of comprehensive national level preparedness plans and guidance for response to all regional/national emergencies, whether caused by natural phenomena or acts of man, plans for response(s) to acts of terrorism, and the local preparedness necessary to support Corps continuity of operations. The Corps provides engineering and construction support to state and local governments in response to catastrophic natural/technological disasters. Rapid response to disasters of a regional/national magnitude requires that extensive pre-emergency planning and preparedness activities be conducted to assure the availability of a work force capable of shifting from routine missions to crisis operations and the organizational command and control structure(s) necessary to provide a coordinated and comprehensive response in the critical early stages of a catastrophic disaster.

This program provides the activities necessary to prepare for response to catastrophic natural and technological disasters requiring major Federal support of state and local governments overwhelmed by a disaster event, and for national level emergency water planning. The preparation requires the development of plans, training of employees, conducting of training exercises, including support to Federal Emergency Management Agency (FEMA) exercises, and coordination within DOD and with other Federal agencies and state and local governments. Unlike the Corps' Civil Works programs related to individual project planning, development and operations and maintenance, the NEPP requires the development of an integrated command planning and response capability. Corps divisions have a key role in the planning, coordination and operational control of multi-district response(s) and the integrated preparedness effort required for accomplishing this response. Preparation also includes the Headquarters sponsored Corps-wide programs necessary to provide the capabilities and operational command and control required by Corps field commands in order to accomplish their NEPP responsibilities, both routinely and in specific emergency response situations.

ACCOMPLISHMENTS:

National Emergency Preparedness Program funds provide support to two major national level civil planning areas: (a) support to the nation's ability to mobilize national assets to meet national/regional level emergencies and (b) support to continuity of government and continuity of operations during national

emergencies (e.g., some NEPP funding was used to staff USACE emergency operations centers through the new year period to respond to State and local emergencies). Activities include conducting studies and analyses which identify national support requirements; the development, coordination, review and updating of plans; development of operating guidance and procedures; training of personnel in emergency response skills and procedures; conducting exercises to test readiness; operating and maintaining emergency response command and control facilities and support systems; and providing program management.

FISCAL YEAR 2002:

The FY 2002 program will provide for continuing the implementation of the National Emergency Preparedness Program. Lessons learned from events such as the Midwest Floods of 1993, Hurricanes Hugo, Andrew and Iniki, the Loma Prieta and Northridge earthquakes and the evolving New Madrid earthquake scenario, clearly indicate that the Federal Response Plan, while a solid system, does not contain enough detail to provide for a response to catastrophic disasters that is sufficiently timely or comprehensive. To overcome this, the Corps initiated a program that uses the deliberate planning process to develop scenario specific catastrophic disaster plans. This will result in more detailed planning and should provide for a more comprehensive response to national catastrophic disasters. More extensive coordination with Federal, state and local entities will be incorporated into plan development. Specific plans for response to 7 different earthquake and hurricane events, to include the New Madrid Earthquake, are continuing to be developed. Exercising and refining plans and development of additional plans, and conducting exercises within the scope of available funding will be the focus during FY 2002.

MAJOR FEATURES IN THE FY 2002 PROGRAM:

The FY 2002 program will continue the process of catastrophic disaster planning and limited exercising to enable the Corps to rapidly respond to a broad spectrum of emergencies, with emphasis on natural disaster events that have national implications.

OTHER INFORMATION:

The NEPP is complementary to the Flood Control and Coastal Emergencies (FCCE) appropriation. Although both programs are related to emergency situations, there is a distinct separation of responsibilities. The NEPP provides for the planning, training, and testing activities necessary to develop the capability to meet essential requirements associated with local continuity of operations and response(s) to scenario specific national/regional crises. The FCCE, on the other hand, provides preparedness and response related to emergency flood fighting, post-flood repair and restoration of flood and shore protection works damaged or destroyed by floods, hurricanes or wave action and Corps preparedness associated with Federal Response Plan mission requirements.

APPROPRIATION TITLE: Operation and Maintenance, General -- **Fiscal Year 2002**

6. PROJECT OPERATIONS SUPPORT PROGRAM

Earthquake Hazards Reduction Program for Buildings and Lifelines

SUMMARIZED FINANCIAL DATA:

Estimated Eleven Year Program Cost (FY 1992-FY 2002)	$8,448,000
Allocations Prior to FY 2001	7,348,000
Allocation for FY 2001	500,000
Allocation Requested for FY 2002	**500,000**
Balance to Complete after FY 2002	Unknown

AUTHORIZATION: This program is being conducted under the authority of Public Law 101-614, November 1990, National Earthquake Hazards Reduction Program Re-authorization Act and individual project authorizations for maintaining safety of personnel and emergency response capability.

JUSTIFICATION: The purpose of this program is to respond to the requirements of Public Law 101-614, National Earthquake Hazards Reduction Program (NEHRP) and Executive Order (EO) 12941, Seismic Safety of Existing Federal Buildings. The EO directs all Federal departments and agencies to develop an inventory of their owned and leased buildings and an estimate of the cost of mitigating unacceptable seismic risks in their buildings. The objective of PL 101-614 is to establish and initiate for buildings and lifelines a systematic approach to reducing loss of life, injuries, and economic costs resulting from earthquakes in the United States. Lifelines are defined as public works and utility systems.

STATUS OF IMPLEMENTATION: By the end of FY 2001 the following work will have been completed: (a) over 11,000 owned buildings and powerhouses were inventoried and data collected, (b) seismic screenings of over 700 buildings in all seismic regions, (c) seismic evaluations were performed on over 200 buildings and powerhouses in various geographic regions primarily in high and moderate seismic regions, (d) development of reports for FEMA to be forwarded to Congress on both buildings and powerhouses, (e) development of seismic evaluation guidance for buildings and lifelines: building evaluation criteria, powerhouse evaluation criteria, lifeline criteria for intake towers, navigation locks, and powerhouses, (f) two seismic evaluation seminars for district personnel, (g) technical support to the districts in accomplishing the evaluations, (h) over 30 rehabilitation case studies including seismic mitigation cost estimates (rehabilitation, replacement, or demolition) for buildings, (i) over 25 rehabilitation cost estimate studies for structural or nonstructural powerhouse deficiencies, (j) inventory of USACE owned buildings including powerhouse superstructures, (k) inventory of USACE leased buildings with estimated populations and recommendations for leasing procedures, (l) development of mitigation program options to meet the executive order requirements and the legal opinion concerns, (m) develop technical seismic building evaluation criteria, (n) develop programmatic seismic criteria, (o) develop guidance for the seismic evaluation and risk mitigation of lifeline facilities, (p) develop associated costs studies to include asbestos and lead based paint costs associated with rehabilitation, (q) adapt the building and powerhouse inventory database to an Oracle system compatible with the OMBIL program and (r) revise building report to reflect the new criteria. During FY 2002 work is planned to continue on the following: (a) continue development of mitigation program options to meet the executive order requirements and the legal opinion concerns, (b) refine the develop technical seismic building evaluation criteria, (c) refine the develop programmatic seismic criteria, (d) refine the development guidance for the seismic evaluation and risk mitigation of lifeline facilities, and development of building and powerhouse mitigation plan options, (e) prepare sample mitigation plans for 5 to 10 buildings, (f) adapt and update building evaluation guidance, (f) improve information technology transfer to the project

level. (Note: One-third of the FY 98 funds were used to inspect and evaluate drainage pipes through levees. During recent floods seepage along these pipes showed them to be critical weak points in levee protection systems.)

MAJOR FEATURES OF THE FY 2002 PROGRAM: USACE has a legal opinion which indicates that once we have identified seismically vulnerable structures we are legally responsible to develop a plan to mitigate these vulnerabilities. In addition, the FEMA Report to Congress due in December 2000 requires agencies to submit agency-specific mitigation action plans in FY 2002. FEMA is pursuing the possibility of requiring agencies to develop mitigation plans for their deficient buildings. The funds requested will be used finalize this agency specific mitigation plan, to attempt to address the legal responsibility, provide the tools for implementation of the program that would lead to supportable, defensible mitigation decisions, provide assistance to districts in the development of mitigation concepts and designs, provide support to HQUSACE in oversight and management of the mitigation program, provide technical support to HQUSACE, maintain technical seismic expertise, develop guidance for additional lifeline systems not previously covered in commercially available standards or existing USACE guidance, develop guidance for operations personnel, develop a mitigation plan for the USACE lifelines, update and maintain database. The development and updating of guidance for the seismic evaluation and risk mitigation of lifeline facilities will continue as well. If implemented as written the FEMA mitigation plan would require that seismic evaluation of over 50 structures approximate cost (at cost of approximately $20,000 per structure) and development of mitigation plans for in excess of 80 structures (the cost estimate for mitigation plans range from $10,000 to $50,000 per structure) within the first three years of the program FY 2002, FY 2003, and FY 2004. Design of seismic rehabilitation of some of those project would be required in FY 2004 to facilitate construction starts in FY 2005.

APPROPRIATION TITLE: Operation and Maintenance, General -- **Fiscal Year 2002**

6. PROJECT OPERATIONS SUPPORT PROGRAM

Great Lakes Sediment Transport Modeling

SUMMARIZED FINANCIAL DATA:

Estimated Total Program Cost	$ 11,500,000
Allocation Requested for FY 2002	500,000
Balance to Complete after FY 2002	8,000,000
Allocation for FY 2001	500,000
Increase of FY 2002 from FY 2001	0

Authority: Section 516(e), Water Resources Development Act of 1996

Justification: The Corps is directed to develop sediment transport models for tributaries to the Great Lakes that discharge to Federal navigation channels or Areas of Concern (AOCs). The language of the authority is not specific as to the application of the models, but does direct the Corps to coordinate with Great Lakes States and utilize existing data and information. Congressional staff have indicated the intent was that sediment transport models be used to target areas for preventative measures to control sediment
loadings to navigation projects and AOCs.

Background: Congress provided $500,000 for the Great Lakes sediment transport models in FY 1998 and 1999. Congress included $500,000 for this program in the FY 2001 Appropriations Bill sent to the President in October. A strategy for implementing this authority was developed in cooperation with the Great Lakes Commission. The strategy included four major activities:

1. a technical workshop to assess what models already exist, the types of questions these models can address, and the data requirements and costs for sediment transport model application;
2. a user's workshop to bring together interests who might use the sediment transport models for management of sediments, soil/water resources, Remedial Action Plans, or other applications;
3. selection of tributaries for model development; and
4. public outreach.

Accomplishments through Fiscal Year 2001: The workshops were held in 1998. An initial appraisal indicated that there are approximately 60 Great Lakes tributaries that fit the criteria of Section 516(e), and it was determined that FY 1998 funding would be sufficient to begin development of sediment transport models at three tributaries. States were asked to prioritize the tributaries for sediment transport model development. A list of the short-term priority tributaries for model development was established

Based on the priorities established by Great Lakes states, the Corps has completed model development at six tributaries: Maumee River, Ohio/Indiana; Saginaw River, Michigan; Nemadji River, Minnesota/Wisconsin Buffalo River, New York; Milwaukee River, Wisconsin, and; Grand Calumet River, Indiana. The model developed for the Nemadji River is being utilized by the states and local soil conservation districts to evaluate the efficacy of various timber harvesting practices on soil and streambank erosion. The model of the Grand Calumet River is being used to support the State of Indiana's development of Total Maximum Daily Loads (TMDLs) for the River with supplementing funds from the Corps' Remedial Action Plan program (Section 401, WRDA 1990), contributions from the State and a grant from USEPA.

Public Outreach: The Great Lakes Commission facilitated coordination with Great Lakes States and implemented a public outreach program to explain what sediment transport models are for, what questions they can address, and how they might be applied in Great Lakes tributaries. The Commission developed an Internet home page for this program to keep model users and stakeholders informed: **http://www.glc.org/projects/sediment/** A workshop was conducted in Duluth in April 2000 to provide technology transfer on the sediment transport model for the Nemadji River and facilitate a regional discussion on soil conservation options and their benefits. This workshop was well attended by state and local resource managers and will serve as a prototype for application at other Great Lakes tributaries.

Fiscal Year 2002: Through the end of FY01, the Great Lakes Sediment Transport Modeling program has made substantial progress in supporting the needs of Great Lakes States, conservation districts and local agencies and groups related to soil conservation and non-point pollution prevention. The value of this program will grow as model development becomes more integrated with watershed planning, TMDL evaluations, RAPs and Lakewide Management Plans. Increased, reliable funding in fiscal 2002 and beyond will assure maximum cooperation and benefits.

APPROPRIATION TITLE: Operation and Maintenance, General -- **Fiscal Year 2002**

6. PROJECT OPERATIONS SUPPORT PROGRAM

Management Tools for O&M

SUMMARIZED FINANCIAL DATA

Estimated Total (FY 2000-2002) Program Cost	$ 3,085,000
Allocation Requested for FY2002	500,000
Balance to Complete after FY2002	0
Allocation for FY 2001	500,000
Increase of FY 2002 over FY 2001	0

JUSTIFICATION:

Operations and Maintenance, General is the Corps of Engineers largest Civil Works (CW) appropriation account. During preparation of the budget for submittal to the Office of Management and Budget (OMB) and Congress, managers of the CW Operation and Maintenance (O&M) appropriation must identify, provide cost estimates for, and assign priorities to the work to be accomplished and/or deferred in the program for the budget year. The prioritization requirement is complicated by the diversity (five uniquely different major business areas) and size of the CW O&M budget. Because the funding needs significantly outstrip the available programmed funds, an objective and consistent prioritization process is essential. Typically, the CW O&M budget contains over 17,000 items of work on approximately 850 projects in 38 Civil Works districts throughout the nation. Recent appropriation levels have included moderate growth in the CW O&M budget from approximately $1.6 billion in fiscal year 1998 to an estimated $1.88 billion in fiscal 2000. Budget caps and other restraints will make future O&M budget increases more difficult to obtain even though O&M requirements will increase. Thus, the CW O&M budget constraints and the requirement that the budget be performance based are the impetus for this research program. It proposes a performance-based benefits analysis model/procedure for prioritization/ranking of the maintenance activities of the annual CW O&M budget, and it includes a “best practices” component to assist in cost efficient execution of the O&M budget.

The need for a performance-based benefits analysis procedure has been validated by several recent policy initiatives including The Government Performance and Results Act (1993) and the Corps’ Performance Measurement Guidebook (1995). The product of this research will provide an objective, consistent, and reproducible procedure to be used for both O&M budget prioritization and quantifying the impact of deferred maintenance on maintenance and/or operations expenditures. The product can also be used to identify the optimum (lowest) level of O&M funding required to maintain justified and established levels of customer service. It accomplishes this by relating maintenance expenditures to condition changes and condition changes to changes in customer service and/or operation/maintenance expenditures.

The best practices effort is needed to assure that lessons learned in technology and process application at one district are shared with all districts and project sites. The product, an internet accessible, O&M Cost Reduction Handbook, will provide brief descriptions of research activities that have been successfully utilized in the field but not widely implemented. The Handbook will initially focus on CW O&M funded research that has been successfully used in the field by at least one district.

Limited work required to develop a performance-based benefit analysis model for O&M budget prioritization has already been initiated by previous or other ongoing activities. The completed work includes the component level condition indices (CIs) and QUADRANT. The CIs are objectively based, reproducible numerical indicators of the condition of structures and equipment. CIs are developed at the component level (e.g., lock gates, dam gates, concrete monoliths, steel sheet pile structures, etc.). CIs have been completed for most common CW infrastructure components excluding recreation facilities, levees/floodwalls, lift gates, dam sluice/conduit gates, electrical and motors. QUADRANT is a management tool for providing economic (net benefit value) information for prioritizing annual non-routine maintenance. QUADRANT has been prototyped and evaluated for inland navigation and hydropower, and significant modifications identified. The ongoing work includes several multi-attribute prioritization efforts and models for maintenance optimization. The missing items required to complete the performance-based benefit analysis model are the completion of the remaining CIs, the development of composite CIs for O&M work items, and the development of an objective and consistent benefits analysis model. A Summary Index (SI) procedure, based on CIs, will be developed for indicating the overall condition of a project or site. Additionally, a recent analysis of CIs and QUADRANT use indicates that the final product must be simple and easy to use. Thus the CI inspection procedures will be revised and simplified, and the performance based benefit analysis model will be simple and user friendly.

FY 2002 ACTIVITY:

Field utilization of the O&M Cost Reduction Handbook will be assessed to determine the required modification including the need for a feedback loop. Based on the FY00 analysis, the development of simplified CIs will be initiated to support the composite CI requirement. Also, new CIs will be developed to support the composite CI requirement. Development of SIs for site or project condition indices will be initiated. The development of a benefits analysis procedure for O&M budget prioritization will be initiated, and it will integrate the FY00 field effort.

FY 2001 ACCOMPLISHMENTS:

The beta version of the O&M Cost Reduction Handbook was completed and field evaluation initiated. Reports and training were completed on the Embankment Dam and Non Rubble Breakwaters & Jetties CI procedures. Decision points were reached on what other CIs will be developed and how CI inspection procedures will be simplified. Procedures for developing composite CIs that are applicable to maintenance work items in the annual O&M budget were proposed for field review. A review of existing methods of benefits analysis for work item prioritization was completed and integrated into ongoing field efforts directed at O&M budget prioritization.

APPROPRIATION TITLE: Operation and Maintenance, General -- **Fiscal Year 2002**

6. PROJECT OPERATIONS SUPPORT

Performance Based Budgeting Support Program

SUMMARIZED FINANCIAL DATA:

Estimated Annual Cost of Continuing Program	$
Allocation for FY 2001	$ 415,000
Allocation Requested for FY 2002	$ 415,000

AUTHORIZATION: The Government Performance and Results Act of 1993 (GPRA)and under basic project authority in conjunction with general authorities contained in various laws.

JUSTIFICATION:

1a. GPRA requires that the Corps implement performance based budgeting for Civil Works Operations and Maintenance, General Program. The Performance Based Budgeting Support Program addresses this requirement by seeking new methods for linking performance to annual budget requests and for analyzing the potential economic impact of budget requests on customers.

1b. The objective of this program is to develop and use an improved understanding of the relationship between budget versus results in the corporate management of the O&M program. An automated national system has been developed to focus the total workforce on results-oriented management and performance based budgeting improvements. Performance measurements, at different organizational levels, provide the analytical basis to make adjustments in priorities both at the program and project levels concerning efficiencies of facilities or services. Comparison of measurements among projects at all levels helps the O&M management to recognize, verify and adjust business processes to align with national goals. Over the past several years, both processes and procedures for developing, analyzing and using performance measurements to manage a results-oriented business were developed. This included the design and development of a centrally maintained corporate O&M information system that is fed by transactional systems, such as the lock performance monitoring system, to collect, process and distribute both national and local performance and output information. The proposed funding level will allow only for caretaker management of the automated national system, some continued inventory work, and limited work on decision making process development. System maintenance and corporate distribution and analysis is not funded as part of this item.

2. **WinABS**: FY 2002 efforts are aimed at refinement of a performance based budget process and analytical tools to set priorities for O&M work packages with the Windows version of the Automated Budget System (WinABS) and a return to traditional direct funding for the maintenance and continuing viability of WinABS, which has been funded under General Expense for several years. Corps O&M budgeting personnel have successfully used WinABS to rank work packages, but need an improved evaluation process to determine budget priorities based on performance and/or expected benefits resulting from funding and accomplishment of the maintenance work. The process is based on work package performance and incremental analysis and will allow for evaluation of work

packages with WinABS. Funding will allow work packages to be “scored” based on performance indicators and relative outputs to help select a set of work packages for the O&M budget. When funding permits, the new performance based budget process and tools will be incorporated within the existing WinABS process.

APPROPRIATION TITLE: Operation and Maintenance, General -- **Fiscal Year 2002**

6. PROJECT OPERATIONS SUPPORT PROGRAM

Regional Sediment Management Demonstration Program

SUMMARIZED FINANCIAL DATA:

Total Federal Program Estimate	$ 15,000,000
Allocation Prior to FY 01	1,000,000
Allocation FY 01	1,500,000
Budget Request FY 02	1,500,000
Additional to Complete After FY 2002	11,000,000

Scope: The Demonstration Program goals are to link the management of authorized Corps projects with one another, with the data collection and shoreline management activities of other Federal agencies, and with State and local governments projects, within the limits of a regional littoral system (the coastal equivalent of a watershed). The purpose is to demonstrate the cost savings and increased economic and environmental benefits on both the short term and the long term of keeping beach quality sand within the littoral system.

Accomplishments: Mobile District developed an extensive baseline data base of the shoreline and offshore bathymetry for the coast of Alabama and linked that with existing shoreline and bathymetry for Florida, creating a GIS data base and Regional Sediment Budget. They monitored the placement of beach quality sand from the Mobile Harbor Ship Channel placed upon the shoals off Dauphin Island in the previous year to measure the benefits of having changed the disposal site for the channel dredging. They also monitored the effects of changed management actions by the Corps and the state of Florida at other inlets. The cooperation among Federal agencies and the collaboration among the three levels of government have been the greatest accomplishment to date. Demonstration Projects were initiated in northeast Florida, New Jersey, New York, the southeast coast of Lake Michigan, and southern California. The New Jersey and New York projects featured collaboration with the US Geological Survey, the Minerals Management Service, the National Ocean Service, and the National Environmental Satellite Data and Information Service in mapping and managing offshore sediment resources as well as nearshore processess. The Lake Michigan project featured close coordination and cooperation with the Corps regulatory program and the states of Michigan and Indiana. The southern California project links the efforts of the state and numerous beach communities from Dana Point to Del Mar. The northeastern Florida project links several navigation projects with shore protection projects in conserving sand.

APPROPRIATION TITLE: Operation and Maintenance, General -- **Fiscal Year 2002**

6. PROJECT OPERATIONS SUPPORT PROGRAM

Reliability Models Program for Major Rehabilitation

SUMMARIZED FINANCIAL DATA:
SUMMARIZED FINANCIAL DATA:

Estimated annual Cost for Continuing Program	$675,000
Allocation for FY 2001	675,000
Allocation Requested for FY 2002	675,000

JUSTIFICATION: The purpose of this program is to respond to yearly needs of Districts and Divisions which are preparing Major Rehabilitation reports for the upcoming fiscal year. The objective of the program is to provide reliability models for project features or components that are being considered for Major Rehabilitation, or to provide procedures to consider the impact of various chemical, environmental or physical processes in a reliability analysis.

STATUS OF IMPLEMENTATION: Reliability models and other analytical tools have been provided in support of Major Rehabilitation reports on numerous navigation and hydropower projects. In addition, 18 rehabilitation workshops have been conducted in the last 10 years to provide assistance to the Districts as they prepare their reports. These workshops offer guidance in conducting reliability and risk analyses, and provide the opportunity for interdisciplinary teams from the Districts to discuss their particular project with HQUSACE and other Districts personnel. A report is in the process of being prepared to show the progress of the preparation of reliability models in support of the FY 2000 rehabilitation reports and a similar report will be prepared for the FY 2001 and 2002 work.

FY 2001 PROGRAM: The requested funds will be used to prepare reliability models and collect data for reliability analyses anticipated to be required by several Districts. Reliability models and/or data are anticipated to be needed for the following: Development of a reliability model for seepage through embankment dams and levees will continue; Development of a screening level tool for the districts to use to prioritize major rehabilitation and dam safety projects; Evaluation of data collected on performance of dam gates, to determine performance modes and verify load cycles used in reliability analyses, and electrical/mechanical systems model for locks and dams. Provide reliability analysis procedures for selected hydropower equipment. It is also anticipated that 2 rehabilitation workshops would be conducted. The makeup of these units is subject to the needs of the respective Districts and Divisions.

APPROPRIATION TITLE: Regulatory Program, FY 2002

AUTHORIZATION: Rivers and Harbors Act of 1899, Sections 9, 10 and 13
Clean Water Act, Section 404
Marine Protection, Research and Sanctuaries Act, Section 103

SUMMARIZED FINANCIAL DATA:

Budget Request for Fiscal Year 2002	$128,000,000
Appropriation for Fiscal Year 2001	$125,000,000
Increase in FY 2001 over FY 2000	$ 3,000,000

JUSTIFICATION:

Background. The Corps of Engineers has been regulating certain activities in the nation's waters since 1890. Most of the authority for administering the program has been delegated to the district and division commanders. National public awareness of the aquatic environment, including wetlands, and increasing state and Federal regulatory emphasis continue to grow. In 1993, an interagency plan was initiated to improve management and protection of the nation's wetlands. The Corps has implemented many aspects of the plan, designed to improve the efficiency and effectiveness of the Corps Regulatory program. Some changes have enhanced efficiency, allowing the Corps to respond more quickly to permit applicants, while others have improved its ability to ensure protection of the aquatic environment. The general permit program is the primary method of reducing Federal regulation of minor activities and eliminating duplication of effort with state and local governments. However, by statute, general permits can only authorize projects with minimal adverse effects on the aquatic environment. The Corps works with state and local governments to develop mechanisms that give them greater responsibility for aquatic resources including wetland regulation. This is achieved primarily through programmatic and regional general permits but also includes joint permit applications and processing procedures as well as work-sharing agreements. In addition, the Corps supports efforts to advocate assumption of Section 404 authority (in non-navigable waters) by states and supports increased development of program general permits for states and other governmental agencies who also regulate the aquatic environment, where the state or local regulatory program is able to implement appropriate regulatory controls. (Since 1984, only Michigan and New Jersey have chosen to assume this aspect of the program). The Corps has issued over 12 programmatic general permits.

APPROPRIATION TITLE: Regulatory Program, FY 2002 (continued)

Types of Activities Regulated by the Corps.

a. Construction and other work in navigable waters of the United States;
b. Construction of fixed structures and artificial islands on the outer continental shelf;
c. Discharges of dredged or fill material, including those associated with construction and land-clearing activities, into the waters of the United States (including wetlands);
d. The transportation of dredged material for the purpose of disposal in ocean waters.

Evaluation Criteria. The decision whether to issue a permit is based on an evaluation of the probable impact of the proposed activity on the public interest. That decision reflects the national concern for both protection and utilization of the Nation's aquatic resources. In addition, for Section 404 permits, the Corps must determine compliance with the Clean Water Act, Section 404 (b)(1).

ACCOMPLISHMENTS: In FY 2000, the Corps authorized almost 90,000 activities in writing. Of these, 90 percent were authorized by regional and nationwide general permits and the remaining 10 percent by individual permits. Although the evaluation process for an individual permit is typically greater than that for a general permit, most regional and nationwide authorizations now involve substantive evaluation and determination of necessary mitigation. Without regional and nationwide general permits, all activities would have to be intensively evaluated as individual permits. The Corps continues to depend on its nationwide permit program to help manage its regulatory workload. In FY 2000, the Corps revised its nationwide permit program to insure greater protection of the aquatic environment. The changes, however, will result in substantially more activities requiring individual permits, thus increasing the regulatory workload for the districts. In FY 2000, the Corps also implemented an administrative appeals process for both permit denials/conditions and jurisdiction determinations. The process allows the public to appeal Corps permit and jurisdictional decisions without resorting to time-consuming and costly litigation.

The Corps continues to ensure protection of the nation's aquatic environment, while working to provide fair and equitable decisions in a reasonable period of time. Because of a nearly 50-percent increase in the total number of written permit authorizations since the early 1990's, and increases in workload associated with revisions to the Nationwide permit program, the Corps has not been able to maintain its evaluation time for permit actions. In FY 2000, 90% of all actions were authorized in less than 60 days, a decline from 94% in FY 1998. Also, in FY 2000, 62% of standard individual permits (the most complex permits) were completed within 4 months, compared to 80% in FY 1998. In addition to the permit evaluation process, the Corps continues to make over 60,000 jurisdiction determinations a year.

APPROPRIATION TITLE: Regulatory Program, FY 2002 (continued)

FISCAL YEAR 2002: The request of $128 million is a $3 million increase over the $125 million appropriated for FY 2001. This increase is necessary to continue Corps responsibilities to serve the regulated public in a fair and reasonable manner, while ensuring the protection of the aquatic environment required by laws and regulations. The increase will pay for some, not all, increases in labor costs. It is likely that permit evaluation times will increase further, especially since review requirements, such as those mandated by endangered species regulations, are increasing. To insure an appropriate level of funding for permit evaluation, enforcement and compliance activities (including the ability to resolve violations by landowners), will be reduced.

Within approved funding levels, the Corps will continue to look for ways to increase its efficiency and performance, primarily through development of additional regional and programmatic general permits, without compromising protection of aquatic resources or service to the public. The Corps will work to insure that every opportunity is afforded the regulated public to use nationwide permits, which greatly expedite the approval process. In addition, the Corps will continue watershed planning efforts and other studies that help manage aquatic resources in partnership with states wherever possible. Such efforts can also expedite approvals and help reduce the federal permit workload.

Other program management efforts will continue, including specialized training of Corps personnel and technical assistance to Corps districts by the Engineer Research and Development Center (ERDC). Generally, from $500,000 to $1,000,000 is allocated to ERDC each year for its technical assistance with complex and sensitive permit cases. In addition, smaller funding amounts may be allocated to other Corps activities (e.g., the Institute for Water Resources) to address special program management issues such as studies of mitigation banking, improvement of data systems to track program workload and wetland acreage, and assessment of impacts due to program changes. Funds also will be used to pay for the review of environmental impact statements by Corps districts, an increasingly costly work item, especially for larger projects.

The $128 million will be applied as follows:

Permit Evaluation	$ 102,000,000
Enforcement, Compliance and Resolution	$ 19,000,000
Administrative Appeals Process	$ 3,000,000
Studies and Wetlands Technical Support	$ 2,000,000
Environmental Impact Statements	$ 2,000,000
TOTAL	$ 128,000,000

APPROPRIATION TITLE: **Flood Control and Coastal Emergencies (FCCE), FY 2002**

SUMMARIZED FINANCIAL DATA:

Appropriation for FY 2001	$0
Budget Request for FY 2002	$0
Change from FY 2001	$0

DISASTER PREPAREDNESS AND EMERGENCY RESPONSE: The U.S. Army Corps of Engineers continues to provide a leadership role in response to natural disasters throughout the United States. In that regard, the Corps must maintain a preparedness program that ensures the Corps is ready to respond to the needs of the Nation. No new funds are requested for FY 2002; carryover of available funds is expected to provide for the known requirements of this program. The Corps responsibilities for emergency response require sustainment of fully functional engineering, construction, and emergency operations capabilities. This response can be under Corps authorities, such as P.L. 84-99, 33 USC 701n, Flood Control and Coastal Emergencies, or in support of other agencies, particularly the Federal Emergency Management Agency (FEMA) under The Robert T. Stafford Disaster Relief and Emergency Assistance Act, 42 USC 5121 et seq. Response activities under P.L. 84-99 authority include the following: all preparedness activities; emergency operations (flood response and post-flood response); emergency repair and restoration of flood control work which are threatened, damaged or destroyed by flood; emergency protection of existing Federal hurricane and shore protection works; the repair or restoration of Federal hurricane or shore protective structures damaged or destroyed by wind, wave or water action of other than ordinary nature; preventive work performed prior to flooding when conditions pose a threat to life or property; providing emergency supplies of clean water to any locality confronted with a source of contaminated water causing or likely to cause a substantial threat to public health and welfare; and provision of water supplies to drought-distressed areas by reimbursable well drilling or transportation of water at Federal cost.

In support of FEMA's disaster response and recovery activities (most of which are specified in the Federal Response Plan), Corps mission assignments have included emergency debris removal; preliminary damage assessments; temporary housing and life support; infrastructure restoration; emergency snow removal contracting; engineering services, construction management, and other support that makes full use of the Corps engineering, contracting, and construction expertise. The availability of carryover funds should provide for normal disaster preparedness activities, limited emergency operations activities, and lab/technical support. The number and magnitude of disasters in FY 2001 and FY 2002 will dictate the depletion rate of the emergency fund. If the balance were to fall to below $10 Million due to emergency operations activities, the Army would consider an emergency transfer of civil works funds into the FCCE account and initiate a request for an emergency supplemental appropriation to assure the Corps can maintain a nationwide rapid response capability**.** The prudent management of FCCE funds assures that mobilizing people and materials, obtaining contractor support, and coordinating with other agencies involved in emergency events are accomplished on an expedient, "24/7" immediate response basis. Included in these emergency activities are overtime pay for Headquarters staff, travel to support disaster response and recovery operations, supplies and materials, increased staff support from field activities and Individual Mobilization Augmentees (IMA's), and Remote Sensing/Geographic Information System (GIS) services to support field operations.

APPROPRIATION TITLE: **Flood Control and Coastal Emergencies (FCCE), FY 2002 (continued)**

ACCOMPLISHMENTS: In the past year, the Corps has successfully responded to disasters such as the flooding in Arizona; New Mexico fires; droughts in the Southwest and Midwest states; Hurricane Debby; and the Oklahoma tornadoes. In addition, work has continued on repair and rehabilitation projects in California, the Pacific Northwest, and James River, SD. The planning of and preparedness for "all hazards" response activities are funded under P.L. 84-99 authority. The continued investment in these activities guarantees an engineering organization capable of responding to both natural and manmade disasters to include catastrophic events of major proportions such as hurricanes and earthquakes. To continue to provide rapid, effective and efficient emergency response to the needs of communities impacted by major disasters, the Corps has developed a new response system -- Readiness 2000 – which provides trained professionals from throughout the Corps to plan for disasters and respond within 6 to 12 hours of activation. This new concept of operations has greatly improved the effectiveness and efficiency of emergency response and recovery operations. Work continues to develop and maintain the capabilities and readiness of these critical response elements.

Major preparedness efforts include the review and updating of response plans based on lessons learned from recent disasters; training of personnel and teams to develop critical skills which enhance the capability to respond under adverse conditions; procurement and prepositioning of critical supplies and equipment (i.e., sandbags, pumps) which likely would be unavailable during the initial response stages; periodic exercises to test and evaluate plans, personnel, and training; inspection of non-Federal flood control projects to ensure their viability to provide flood protection and assess their eligibility for post-flood rehabilitation; laboratory support for field operations; liaison with State and local governments and agencies; and effective management of the overall response program to ensure workable, coordinated efforts that will meet the needs of disaster victims. The funding identified under All-Hazards Planning Activities reflects expanded National and Regional planning, training and coordination to support Federal response to all natural disasters. This includes disasters under the umbrella of the Federal Response Plan. Because of the vast experience of the Corps of Engineers in the infrastructure area, the Department of Defense has given the Corps the lead to support FEMA in Infrastructure Response and Recovery. The Federal Response Plan restructuring requirements requires additional planning and coordination at the Federal (28 departments and agencies), State, and local levels to jointly train and conduct exercises.

FISCAL YEAR 2002: Due to the carryover of available funds, sufficient funds are expected to be available, subject to emergency requirements arising from disasters, to execute an effective FY 2002 program for preparedness activities, to include an aggressive levee inspection program. Funds also will be available for continued response planning and All-Hazards Preparedness Activities in support of the Federal Response Plan. The program for FY 2002 will provide for the following preparedness activities:

Corps Statutory Authorities	$ 13,000,000
All-Hazards Planning Activities	$ 5,000,000
Facilities	$ 1,000,000
Inspections	$ 1,000,000
Total Preparedness Program, FY 2002	$ 20,000,000

APPROPRIATION TITLE: Formerly Utilized Sites Remedial Action Program, Fiscal Year 2002
($000)

State Project Name	Allocated through FY 2001	FY 2002 Request	Remaining Requirement*
Connecticut			
Combustion Engineering, Windsor, CT	6,607	1,240	35,194
Maryland			
W. R. Grace, Baltimore, MD	8,697	4,235	38,040
Massachusetts			
Shpack Landfill, Norton, MA	3,763	1,815	1,232
Missouri			
Latty Avenue, St. Louis, MO	56,362	6,000	87,795
St. Louis Airport, St. Louis, MO	124,796	26,970	84,511
St. Louis Airport Vicinity Properties, St. Louis, MO	35,329	2,000	99,010
Downtown, St. Louis, MO	87,866	17,500	47,376
New Jersey			
Dupont Chambers Works, Deepwater, NJ	4,705	1,000	13,932
Maywood, NJ	175,655	27,170	161,255
Middlesex, NJ	72,733	800	20,538
Wayne, NJ	112,683	5,000	1,016
New York			
Ashland 1, Tonawanda, NY	54,478	650	106
Colonie, NY	118,497	13,330	17,255
Linde Air Products, Tonawanda, NY	75,097	11,650	39,617
Niagara Falls Storage Site, NY	23,727	10,500	320,446
Seaway Industrial Park, Tonawanda, NY	6.463	1,420	17,493
Ohio			
Former Harshaw Chemical Company, Cleveland, OH	100	470	42,725
Luckey, OH	14,444	2,000	134,790
Painesville, OH	7,590	5,250	1,021
Pennsylvania			
Shallow Land Disposal Area, Parks Township, PA	185	1,000	TBD
	983,320	**140,000**	**1,163,352**

* The total cost will depend upon the specific cleanup standards established, taking into account input from federal, state, and local regulators, the general public, and other stakeholders. As final cleanup plans are approved in Record of Decisions, it will be possible to provide more definitive estimates, as have been provided on those sites with a completed ROD. The current cost estimates assume that the cleanups will be completed by the dates shown on justification sheets for individual sites.

APPROPRIATION TITLE: Formerly Utilized Sites Remedial Action Program, Fiscal Year 2002 North Atlantic Division

CONNECTICUT

Site	Total Estimated Federal Cost $	Allocation Prior to FY 2001 $	Allocation FY 2001 $	Tentative Allocation FY 2002 $	Additional to Complete After FY 2002 $
CE, Windsor, CT New England District	43,041,000*	5,807,000	800,000	1,240,000	35,194,000

The CE site is a 600-acre area in Windsor, Connecticut. CE, under contract to the Atomic Energy Commission (AEC), fabricated nuclear fuel assemblies using highly enriched uranium (HEU) from 1958 to 1961. CE also conducted licensed commercial nuclear activity on the site from the early 1960's to 1993. Although the commercial nuclear fuel fabrication ceased in 1993, CE is still licensed by the Nuclear Regulatory Commission (NRC) for other commercial nuclear activities and the facility is still operating today. HEU is the primary radiological contaminant of concern at the site that will be addressed by Formerly Utilized Sites Remedial Action Program (FUSRAP). Only limited site characterization work had been performed when FUSRAP was transferred from the Department of Energy (DOE) to the Corps for execution. Since then, the Corps has performed a gamma survey of the site, initiated a complete site characterization, completed characterization of Building 3 and the Rappaport Building, and initiated potentially responsible party (PRP) investigations.

Fiscal Year 2001 funds are being used to complete site characterization and initiate feasibility studies to develop and evaluate alternatives for remedial actions. In addition, these funds are being used to identify Applicable Relevant and Appropriate Requirements (ARARs) and Derived Concentration Guideline Limits (DCGLs), and evaluate clam shell removal action requirements for the town to acquire the northern parcel of CE property adjacent to the Town's landfill. Funds requested for Fiscal Year 2002 will be used to complete feasibility studies and initiate preparation of a Record of Decision.

Site remediation is scheduled to be completed in FY 2008**.

*** The total cost will depend upon the specific cleanup standards established for this site, taking into account input from federal, state, and local regulators, the general public, and other stakeholders. Once a final cleanup plan for the site has been approved in a Record of Decision, it will be possible to provide a more definitive estimate. The current cost estimate assumes that the cleanup will be completed by the date shown.**

**** The completion schedule will depend on the cleanup standards established for this site and overall funding constraints.**

APPROPRIATION TITLE: Formerly Utilized Sites Remedial Action Program — North Atlantic Division

MARYLAND

Site	Total Estimated Federal Cost $	Allocation Prior to FY 2001 $	Allocation FY 2001 $	Tentative Allocation FY 2002 $	Additional to Complete After FY 2002 $
W.R. Grace, Baltimore, MD Baltimore District	50,972,000*	5,797,000	2,900,000	4,235,000	38,040,000

The W.R. Grace site is situated within a 260-acre property owned by Grace, located on an industrialized peninsula in south Baltimore. Currently, Grace manufactures and produces specialty chemicals at this facility. Contamination at the site consists of radioactively contaminated slabs and other surfaces impacted by the thorium extraction process in Building 23, which is still used by Grace, and the Radioactive Waste Disposal Area (RWDA) to the east of the plant proper. To date, a Potentially Responsible Party (PRP) has not been identified. The Department of Energy (DOE) had conducted radiological surveys at the site; however, no actual characterization or remediation had been performed. To date the Corps has initiated a remedial investigation/feasibility study (RI/FS) at the radioactive waste disposal area (RWDA), a removal site inspection report and an Engineering Evaluation/Cost Analysis (EE/CA) for Building 23 decontamination, and removed contaminated waste stored in Building 23.

FY 2001 funds are being utilized to initiate the decontamination of Building 23, to continue and complete the feasibility study for the RWDA, and to initiate a Record of Decision (ROD) for remediation of the RWDA. The funds requested for FY 2002 will be utilized to continue the decontamination of Building 23, and to complete the ROD for the RWDA.

Site remediation is scheduled to be completed in FY 2007**.

*** The total cost will depend upon the specific cleanup standards established for this site, taking into account input from federal, state, and local regulators, the general public, and other stakeholders. Once a final cleanup plan for the site has been approved in a Record of Decision, it will be possible to provide a more definitive estimate. The current cost estimate assumes that the cleanup will be completed by the date shown.**

**** The completion schedule will depend on the cleanup standards established for this site and overall funding constraints.**

MASSACHUSETTS

Site	Total Estimated Federal Cost $	Allocation Prior to FY 2001 $	Allocation FY 2001 $	Tentative Allocation FY 2002 $	Additional to Complete After FY 2002 $
Shpack Landfill, Norton/Attleboro, MA New England District	6,810,000*	3,063,000	700,000	1,815,000	1,232,000

The Shpack site is an 8-acre abandoned domestic and industrial landfill, which operated from 1946 to 1965. It is located along the Norton/Attleboro town boundary line with approximately 5.5 acres in Norton and 2.5 acres in Attleboro. The Town of Norton and Attleboro Landfill, Inc. owns the property. FUSRAP-related radioactive contamination is believed to have come from Metals and Controls, Inc. (now Texas Instruments), which had used the landfill to dispose of trash and other materials from 1957-1965. The General Plate Division of Metals and Controls began to fabricate enriched uranium foils at their Attleboro plant in 1952. In 1959 it merged with Texas Instruments, which continued the operations until 1981, using enriched and natural uranium for the fabrication of nuclear fuel for the U.S. Navy and commercial customers. The site was also listed on the National Priority List (NPL) in 1986, primarily to address other contaminants on site. The Environmental Protection Agency (EPA) has signed an Administrative Order by Consent with a group of Settling Parties (which includes Texas Instruments) for the performance of a remedial investigation/feasibility study (RI/FS). Through FY 00, the Corps has completed a gamma walk-over survey, initiated potentially responsible party (PRP) investigations, and coordinated with other responsible parties and the EPA.

Fiscal Year 2001 funds are being used to complete site investigations and develop and evaluate alternatives for removal action. Fiscal Year 2002 funds will be used to complete Engineering Evaluation/Cost Analysis (EE/CA) and to initiate removal action.

Site remediation is scheduled to be completed in FY 2003**.

*** The total cost will depend upon the specific cleanup standards established for this site, taking into account input from federal, state, and local regulators, the general public, and other stakeholders. Once a final cleanup plan for the site has been approved in a Record of Decision, it will be possible to provide a more definitive estimate. The current cost estimate assumes that the cleanup will be completed by the date shown.**

**** The completion schedule will depend on the cleanup standards established for this site and overall funding constraints.**

APPROPRIATION TITLE: Formerly Utilized Sites Remedial Action Program, Fiscal Year 2002 Mississippi Valley Division

MISSOURI

Site	Total Estimated Federal Cost $	Allocation Prior to FY 2001 $	Allocation FY 2001 $	Tentative Allocation FY 2002 $	Additional to Complete After FY 2002 $
Latty Avenue Properties, Hazelwood Interim Storage Site, MO St. Louis District	150,157,000*	44,362,000	12,000,000	6,000,000	87,795,000

The Latty Avenue Properties site is comprised of several different tracts of land in North St. Louis County, Missouri. The project includes an 11-acre site, encompassing the Hazelwood Interim Storage Site and FUTURA Coatings on Latty Avenue, and the Latty Avenue Vicinity Properties, which are at various nearby locations. The Hazelwood Interim Storage Site and FUSRAP Coatings were placed on the National Priority List in 1989. The primary contaminants of concern are radium-226, thorium-230, and uranium-238 in storage piles created during earlier cleanups, in soils under the piles, and elsewhere on the site. The primary regulators/stakeholders include the Environmental Protection Agency Region VII, Missouri Department of Natural Resources, and the St. Louis Oversight Committee. Potentially Responsible Party investigations are ongoing. In FY 2000, 19,000 cubic yards were removed from the Eastern and railspur piles. Design for this removal was completed, and a contractor mobilized to the site and began removal of the Supplemental Pile under an Engineering Evaluation/Cost Analysis (EE/CA). Development of the draft Feasibility Study/Proposed Plan continued, in FY 00, for final cleanup of the Latty Avenue sites and the St. Louis Airport and Vicinity Properties sites (North County Sites).

FY 2001 funds are being used to finalize the plans and specifications for the Main Pile removal, and remove 18,500 cubic yards from the Main Pile under the EE/CA, and to complete the Record of Decision for the North County Sites. FY 2002 funds will be used to complete the removal of the Main Pile, and initiate characterization of the Hazelwood Interim Storage Site in accordance with the Record of Decision.

Site remediation is scheduled to be completed in FY 2008**.

*** The total cost will depend upon the specific cleanup standards established for this site, taking into account input from federal, state, and local regulators, the general public, and other stakeholders. Once a final cleanup plan for the site has been approved in a Record of Decision, it will be possible to provide a more definitive estimate. The current cost estimate assumes that the cleanup will be completed by the date shown.**

**** The completion schedule will depend on the cleanup standards established for this site and overall funding constraints.**

APPROPRIATION TITLE: Formerly Utilized Sites Remedial Action Program, Fiscal Year 2002 — Mississippi Valley Division

Site	Total Estimated Federal Cost $	Allocation Prior to FY 2001 $	Allocation FY 2001 $	Tentative Allocation FY 2002 $	Additional to Complete After FY 2002 $
St. Louis Airport Site, St. Louis, MO St. Louis District	236,277,000*	96,092,000	28,704,000	26,970,000	84,511,000

The St. Louis Airport Site (SLAPS) consists of 21.7 acres north of Lambert International Airport in North St. Louis County, Missouri. The site contamination is bordered by McDonnell Boulevard on the north and east, Coldwater Creek on the west, Banshee Road and Norfolk and Western Railway on the south. The ditches immediately adjacent to the north and south of SLAPS are considered part of this location. The primary contaminants of concern are radium-226, thorium-230, and uranium-238. The St. Louis Airport Authority owns the property, which is not being used for any activity. The primary regulators/stakeholders include the Environmental Protection Agency Region VII, Missouri Department of Natural Resources, and the St. Louis Oversight Committee. A Potentially Responsible Party Investigation is underway. The site was placed on the National Priority List in 1989. In FY 2000, the Corps removed approximately 53,000 cubic yards under an Engineering Evaluation/Cost Analysis (EE/CA) and continued development of the draft Feasibility Study/Proposed Plan for final cleanup of the area comprising the St. Louis Airport and Vicinity Properties and Latty Avenue sites (North County Sites).

FY 2001 funds are being used to perform design work and remediate approximately 40,000 cubic yards under the EE/CA, and to complete the Record of Decision for the North County Sites. FY 2002 funds will be used to perform design work and remediate approximately 50,000 cubic yards.

Site remediation is scheduled to be competed in FY 2006**.

*** The total cost will depend upon the specific cleanup standards established for this site, taking into account input from federal, state, and local regulators, the general public, and other stakeholders. Once a final cleanup plan for the site has been approved in a Record of Decision, it will be possible to provide a more definitive estimate. The current cost estimate assumes that the cleanup will be completed by the date shown.**

**** The completion schedule will depend on the cleanup standards established for this site and overall funding constraints.**

APPROPRIATION TITLE: Formerly Utilized Sites Remedial Action Program, Fiscal Year 2002 — Mississippi Valley Division

Site	Total Estimated Federal Cost $	Allocation Prior to FY 2001 $	Allocation FY 2001 $	Tentative Allocation FY 2002 $	Additional to Complete After FY 2002 $
St. Louis Airport Site, Vicinity Properties, St. Louis, MO St. Louis District	136,339,000*	33,029,000	2,300,000	2,000,000	99,010,000

The St. Louis Airport Site (SLAPS) Vicinity Properties consists of 78 properties in North St. Louis County, Missouri. The contaminated sites include former ball fields (located directly north of SLAPS), areas along haul roads, and Coldwater Creek. The primary contaminants of concern are radium-226, thorium-230, and uranium-238. Dispersion of radioactive material occurred either through direct migration from SLAPS, by air or water, or through vehicular distribution along the roadways. (This is the case for most of the roadway, shoulder, and ditch contamination.) The properties are owned by residential, commercial, industrial, and state interests; and they are being used for those purposes. These properties have been placed on the National Priority List (NPL). The primary regulators/stakeholders include the Environmental Protection Agency, Region VII, Missouri Department of Natural Resources, and the St. Louis Oversight Committee. A Potentially Responsible Party investigation is underway. As of the end of FY 2000, 33 of 78 properties had been completed or substantially completed under an existing Engineering Evaluation/Cost Analysis (EE/CA); remedial design was completed for several additional properties that will be remediated in the future; and development of the draft Feasibility Study/Proposed Plan for the sites, together with the St. Louis Airport and Latty Avenue sites (North County Sites) was continued. Completion of the Vicinity Properties Sites will require the removal of an additional 111,000 cubic yards of contaminated material.

FY 2001 funds are being used to characterize and design remedial actions at properties remaining to be remediated designs under the existing EE/CA, and to complete the Record of Decision for all of the North County Sites (including the Latty Avenue Sites and the St. Louis Airport sites). FY 2002 funds will be used to continue remedial design at remaining properties and to remediate approximately 700 cubic yards.

The site remediation is scheduled to be completed in FY 2009**.

*** The total cost will depend upon the specific cleanup standards established for this site, taking into account input from federal, state, and local regulators, the general public, and other stakeholders. Once a final cleanup plan for the site has been approved in a Record of Decision, it will be possible to provide a more definitive estimate. The current cost estimate assumes that the cleanup will be completed by the date shown.**

**** The completion schedule will depend on the cleanup standards established for this site and overall funding constraints.**

APPROPRIATION TITLE: Formerly Utilized Sites Remedial Action Program, Fiscal Year 2002 — Mississippi Valley Division

Site	Total Estimated Federal Cost $	Allocation Prior to FY 2001 $	Allocation FY 2001 $	Tentative Allocation FY 2002 $	Additional to Complete After FY 2002 $
St. Louis Downtown Site St. Louis, MO St. Louis District	152,742,000	71,866,000	16,000,000	17,500,000	47,376,000

The St. Louis Downtown Site and vicinity properties are located at the Mallinckrodt Chemical Company plant in St. Louis, Missouri. There are 17 acres where contaminated soils are accessible for remediation without major disruption of plant operations. Also included are 17 buildings, subsurface soil, and 6 vicinity properties. The primary contaminants of concern are radium-226, thorium-230, uranium-238, progeny, metals, and organic compounds. Mallinckrodt owns the property and operates a chemical manufacturing operation on the site. The company has also manufactured radionuclide products independent of government operations. Waste from these operations is commingled with FUSRAP wastes. The vicinity properties are active industrial operations owned by others. A Record of Decision was signed in 1998. The primary regulators/stakeholders include the Environmental Protection Agency Region VII, Missouri Department of Natural Resources, and the St. Louis Oversight Committee. A Potentially Responsible Party investigation is underway. In FY 2000, the Corps completed remediation at Plant 2; initiated remediation of Plant 1; and completed remedial design on Plants 6 East, 6 West, and 7 West. A total of approximately 6,000 cubic yards of contaminated soils were remediated in FY 2000. The total estimated Federal cost shown above does not reflect possible costs of addressing contamination in inaccessible soils.

FY 2001 funds are being used to complete remedial designs for and remove approximately 8,500 cubic yards from Plant 1, Plant 6 East, and three vicinity properties. Additionally, development of the Feasibility Study/Proposed Plan for inaccessible soils is being initiated. FY 2002 funds will be used to complete remedial designs for and remove approximately 15,000 cubic yards from Mallinckrodt West, Plant 7, and four vicinity properties. These funds will also be used to continue the development of the Feasibility Study/Proposed Plan for inaccessible soils.

Site remediation is scheduled to be completed in FY 2006.

NEW JERSEY

Site	Total Estimated Federal Cost $	Allocation Prior to FY 2001 $	Allocation FY 2001 $	Tentative Allocation FY 2002 $	Additional to Complete After FY 2002 $
DuPont Chambers Works Deepwater, NJ Philadelphia District	19,637,000*	3,705,000	1,000,000	1,000,000	13,932,000

The DuPont Chambers Works site is a 700-acre active chemical plant located in Pennsville and Carneys Point Townships on the southeastern shore of the Delaware River, north of the I-295 Delaware Memorial Bridge, and adjacent to the residential community of Deepwater, N.J. The plant is owned and operated by E.I. duPont de Nemours & Company. Operations involving uranium at the Chambers Works site began in 1942. As part of its work on the Manhattan Engineer District (MED) Program, DuPont worked on developing a process for converting uranium oxide to produce uranium tetraflouride and small quantities of uranium metal. The major contaminant is U-238 found in both soil and water samples. During FY 00, the Corps initiated site characterization and Remedial Investigation / Feasibility Study (RI/FS) activities for soil contamination and investigation of possible groundwater contamination.

Fiscal Year 2001 funds are being used for continuation of RI/FS activities for soil contamination and investigation of possible groundwater contamination. Requested funds for Fiscal Year 2002 will be used to complete the Rl/ FS study, to investigate possible groundwater contamination, and to initiate the Record of Decision (ROD).

Site remediation is scheduled to be completed in FY 2005.

*** The total cost will depend upon the specific cleanup standards established for this site, taking into account input from federal, state, and local regulators, the general public, and other stakeholders. Once a final cleanup plan for the site has been approved in a Record of Decision, it will be possible to provide a more definitive estimate. The current cost estimate assumes that the cleanup will be completed by the date shown.**

**** The completion schedule will depend on the cleanup standards established for this site and overall funding constraints.**

Site	Total Estimated Federal Cost $	Allocation Prior to FY 2001 $	Allocation FY 2001 $	Tentative Allocation FY 2002 $	Additional to Complete After FY 2002 $
Maywood, N.J. New York District	364,080,000*	161,955,000	13,700,000	27,170,000	161,255,000

The Maywood site is included on the Environmental Protection Agency Superfund National Priorities List. Site consists of 140 acres of residential, commercial and industrial property totaling 88 commercial and residential properties, located 20 miles north of Newark adjacent to Interstate 80 and State Route 17. There are approximately 259,000 cubic yards of subsurface contaminated material containing thorium-232, radium-226, and uranium-238. The United States owns 11.7 acres of the site, which is being used as a staging area during cleanup operations. The Stepan Company occupies part of the site and operates a chemical factory processing a patented product. Sears operates a large central distribution warehouse (leased) on the site. In the mid-1980's, 25 residential vicinity properties were remediated. In 1994 an Engineering Evaluation/Cost Analysis by the Department of Energy approved a further interim removal action to remediate an additional 39 vicinity properties. As of the end of FY 00, all of the 39 vicinity properties included in the 1994 EE/CA have been remediated, including 23 completed by the Corps (15 in FY 98, 7 in FY99, and 1 in FY00). Additionally, the Corps has completed a draft Remedial Investigations/Feasibility Study/Proposed Plan (RI/FS/PP) for the remainder of the site, and initiated potentially responsible party (PRP) negotiations through the Department of Justice with the Stepan Company.

FY 01 funds are being used to prepare an EE/CA for an interim removal action involving 10 commercial properties impacted by New Jersey Department of Transportation projects, to coordinate the draft RI/FS/PP with stakeholders, and to characterize the site further. FY 02 funds will be used to initiate the interim removal action, to complete the ROD and to initiate remedial design under the ROD.

Site remediation is scheduled to be completed in FY 2008**.

*** The total cost will depend upon the specific cleanup standards established for this site, taking into account input from federal, state, and local regulators, the general public, and other stakeholders. Once a final cleanup plan for the site has been approved in a Record of Decision, it will be possible to provide a more definitive estimate. The current cost estimate assumes that the cleanup will be completed by the date shown.**

**** The completion schedule will depend on the cleanup standards established for this site and overall funding constraints.**

Site	Total Estimated Federal Cost $	Allocation Prior to FY 2001 $	Allocation FY 2001 $	Tentative Allocation FY 2002 $	Additional to Complete After FY 2002 $
Middlesex, NJ New York District	94,071,000*	70,733,000	2,000,000	800,000	20,538,000

The Middlesex site is a Federal government-owned site located in Middlesex, NJ. There are also 36 Vicinity Properties (VPs). Primary contaminants are Uranium-232, Radium-226, and Thorium-232. The Manhattan Engineer District (MED) established the Middlesex Sampling Plant (MSP) in 1943 for use in sampling, storage, and shipment of uranium, thorium, and beryllium ores. MED operations ended in 1955, and the Atomic Energy Commission (AEC) later used the site for storage and performed limited sampling of thorium residues. In 1967, the AEC terminated activities at the MSP and decontaminated onsite structures to meet criteria then in effect. From 1969 to 1979, the site served as a US Marine Corps training center. In 1980, the MSP was returned to the Department of Energy (as AEC's successor), which designated it for clean up under FUSRAP. MSP was used for interim storage, in two piles, of radioactively contaminated soils removed from the vicinity properties (VPs) and from the Middlesex Municipal Landfill (MML). Through the end of FY 00, the Corps has removed and disposed of the MML pile and the VP pile. The Middlesex site was added to the Environmental Protection Agency Superfund National Priorities List (NPL) in FY 99. Coordination with Federal and state agencies, and local communities is continuing.

FY 01 Funds are being used to characterize the subsurface soils and groundwater, and to initiate Remedial Investigation/Feasibility Study (RI/FS) leading to a Record of Decision (ROD) for subsurface contamination and the remaining buildings on the site. FY 02 funds will be used to complete the ROD.

Site remediation is scheduled to be completed in FY 2006.

*** The total cost will depend upon the specific cleanup standards established for this site, taking into account input from federal, state, and local regulators, the general public, and other stakeholders. Once a final cleanup plan for the site has been approved in a Record of Decision, it will be possible to provide a more definitive estimate. The current cost estimate assumes that the cleanup will be completed by the date shown.**

**** The completion schedule will depend on the cleanup standards established for this site and overall funding constraints.**

Site	Total Estimated Federal Cost $	Allocation Prior to FY 2001 $	Allocation FY 2001 $	Tentative Allocation FY 2002 $	Additional to Complete After FY 2002 $
Wayne, NJ New York District	114,688,000	100,672,000	8,000,000	5,000,000	1,016,000

The Wayne site is 6.5 acre Federal government owned site in Wayne Township, NJ. There are also 26 Vicinity Properties (VPs) covering 11 acres in the towns of Wayne and Pequannock. The radioactive contamination (Thorium-232) originated from commercial thorium processing operation conducted by Rare Earths Inc. and W.R. Grace and Company from 1948 to 1971. Contaminants migrated off-site, primarily via Sheffield Brook. The Wayne site was placed on the Environmental Protection Agency's National Priorities List (NPL) in 1984 and was added to the Formerly Utilized Sites Remedial Action Program (FUSRAP) the same year, after Congress directed the Department of Energy to undertake a cleanup of the site. Coordination with Federal and state agencies, and local communities is continuing. W.R. Grace is a potentially responsible party. Settlement negotiations with the company were completed in 1998 and subsequent to court review, a $32M settlement was reached in July 1999. Work accomplished to date included the disposal of approximately 40,000 CY of soil from the VP pile, created by the remediation of the VPs; completion of an Engineering Evaluation/Cost Analysis (EE/CA) ; the removal and off-site disposal of 40,000 cubic yards of contaminated soil under the EE/CA; and the development and approval the Record of Decision (ROD).

In FY 01, the Corps will continue excavation of contaminated soils in accordance with the ROD; and onsite treatment of contaminated water for off-site disposal; and will initiate site restoration. In FY 02, the Corps will complete removal of contaminated soils for off-site disposal , and back-filling and site restoration; and will initiate short-term monitoring and site maintenance.

The remediation of contaminated soils is scheduled to be completed in FY 2002

APPROPRIATION TITLE: Formerly Utilized Sites Remedial Action Program — Great Lakes and Ohio River Division

NEW YORK

Site	Total Estimated Federal Cost $	Allocation Prior to FY 2001 $	Allocation FY 2001 $	Tentative Allocation FY 2002 $	Additional to Complete After FY 2002 $
Ashland 1, Tonawanda, NY Buffalo District	55,234,000	47,880,000	6,598,000	650,000	106,000

The Ashland 1 Site is a privately owned 10.8 acre site in the Town of Tonawanda that is contaminated with radiological waste, including thorium, uranium and radium. The waste that was disposed of at the site originated at the Linde plant, where uranium ore was processed. The Record of Decision (ROD) for this site, which includes Ashland 2 and Area D of the Seaway site, was signed in April 1998. The cleanup approved in this ROD calls for excavation and off-site disposal of radiologically contaminated wastes. The volume estimate in the ROD for Ashland 1 was 33,000 cubic yards. Based on additional sampling during remediation the current estimate for removal and disposal of FUSRAP materials is 130,000 cubic yards. Through FY 00 the Corps completed 90% of remedial action required under the ROD. Planned activities continue to be coordinated with the New York State Department of Environmental Conservation.

FY 2001 funds are being used to complete remediation of the site and to conduct potentially responsible party investigations.

FY 2002 funds will be used to close out the remedial action.

Site remediation is scheduled to be completed in FY 2002.

Site	Total Estimated Federal Cost $	Allocation Prior to FY 2001 $	Allocation FY 2001 $	Tentative Allocation FY 2002 $	Additional to Complete After FY 2002 $
Colonie, NY New York District	149,082,000*	110,462,000	8,035,000	13,330,000	17,255,000

The Colonie site consists of a total area of 11.2 acres plus 56 vicinity properties (VPs). The primary site was owned and operated by National Lead Industries (NL) from 1937-1984. The facility was used for electroplating and manufacturing various components from uranium and thorium. Radioactive materials released from the plant exhaust stacks spread to site buildings, portions of the grounds, and the 56 commercial and residential VPs. NL also dumped contaminated casting sand into the former Patroon Lake. The By order of a New York State Court the NL plant shut down in 1984. Coordination is ongoing with the New York State Department of Environmental Conservation, and local leaders. The transfer of the property from NL to the Federal government in 1984 contained “hold harmless” language which precludes holding NL as a PRP. At the time of transfer of FUSRAP execution to the Corps, the Department of Energy (DOE) had completed remediation of the vicinity properties; and had finalized an Engineering Evaluation/ Cost Analysis (EE/CA), completed in 1995, authorizing a removal action to address contamination at the former NL property itself. Through FY 00, the Corps initiated a removal action, including disposal off-site of stockpiled materials and excavation of contaminated soils, in accordance with the DOE EE/CA. The Corps also initiated a re-evaluation of the alternatives analysis in the DOE EE/CA to address technical concerns regarding on-site disposal and to reflect revised estimates of off-site disposal costs, and began a groundwater investigation.

FY 01 funds are being used to continue removal actions under the DOE EE/CA; complete reevaluation of the DOE EE/CA; issue an amended EE/CA and revised action memorandum, as appropriate, and continue with the groundwater investigations. FY 02 funds will be used to continue the removal action.

Site remediation is scheduled to be completed in FY 2006**.

*** The total cost will depend upon the specific cleanup standards established for this site, taking into account input from federal, state, and local regulators, the general public, and other stakeholders. Once a final cleanup plan for the site has been approved in a Record of Decision, it will be possible to provide a more definitive estimate. The current cost estimate assumes that the cleanup will be completed by the date shown.**

**** The completion schedule will depend on the cleanup standards established for this site and overall funding constraints.**

Site	Total Estimated Federal Cost $	Allocation Prior to FY 2001 $	Allocation FY 2001 $	Tentative Allocation FY 2002 $	Additional to Complete After FY 2002 $
Linde Air Products, Tonawanda, NY Buffalo District	126,364,000*	52,298,000	22,799,000	11,650,000	39,617,000

The Linde project is located in the Town of Tonawanda, a suburb north of Buffalo, NY. The project consists of two distinct areas: (1) The original Linde site, which is now occupied by Praxair, Inc., and (2) the Tonawanda Landfill, which is located about 1.5 miles north of Praxair. The privately owned Praxair facility is zoned industrial and consists of office buildings, laboratories, fabrication facilities, warehouse storage areas, material laydown areas, and parking areas. Uranium processing operations were conducted in five buildings in support of Manhattan Engineering District (MED) activities. The principal contaminants of concern are uranium, thorium, and radium. The vicinity property consists of two contiguous Town of Tonawanda municipal tracts, the Tonawanda Landfill and the Mudflats Area. The landfill is approximately 55 acres in size and the Mudflats area is about 115 acres in size. Landfill operations occurred at the site from the mid-1930's to 1989. During its operations, the landfill accepted a range of materials including household wastes; ash from incineration of sewage treatment, plant sludge, and municipal waste sludge; and unburned municipal waste. Surveys, conducted at both the Tonawanda Landfill and Mudflats area in 1990 and 1991, identified material with technologically enhanced levels of uranium-238 similar to the product and by-product material from Linde. Through FY 00, the Corps completed a building remediation action initiated by DOE prior to October 1997, completed an action memorandum and building demolition and removal action, completed a Record of Decision (ROD) for remediation of contaminated soils, and initiated remediation under the ROD. The total estimated Federal cost has been revised to reflect anticipated additional remedial actions to address residual contamination in Building 14, groundwater contamination, and contaminated materials in Tonawanda Landfill and Mudflats area.

FY 2001 funds are being used to continue soils remedial action, initiate a feasibility study addendum and Proposed Plan for groundwater and Building 14, continue an RI/FS, and initiate a Proposed Plan for the Tonawanda Landfill and Mudflats area.

FY 2002 funds will be used at the former Linde (Praxair) site to complete remedial action of radioactive contaminated soils, and to complete ROD’s for the groundwater, Building 14, and the Tonawanda Landfill and Mudflats area.

Site remediation is scheduled to be completed in FY 2006**

*** The total cost will depend upon the specific cleanup standards established for this site, taking into account input from federal, state, and local regulators, the general public, and other stakeholders. Once a final cleanup plan for the site has been approved in a Record of Decision, it will be possible to provide a more definitive estimate. The current cost estimate assumes that the cleanup will be completed by the date shown.**

**** The completion schedule will depend on the cleanup standards established for this site and overall funding constraints.**

Site	Total Estimated Federal Cost $	Allocation Prior to FY 2001 $	Allocation FY 2001 $	Tentative Allocation FY 2002 $	Additional to Complete After FY 2002 $
Niagara Falls Storage Site, NY Buffalo District	354,673,000*	18,622,000	5,105,000	10,500,000	320,446,000

The Niagara Falls Storage Site is a Federally-owned site with a below ground interim repository for radioactive wastes and residues; two buildings (one of which contains isolated areas of fixed low level radioactive contamination); some areas with surface radiological contamination; and several vicinity properties. It is located in Lewiston Township, 19 miles northwest of Buffalo, New York. Materials stored in this repository include 234,770 cubic yards of low activity radioactive waste and 14,390 cubic yards of high activity residues, including 4,000 cubic yards of K-65 residues. The repository is covered with an interim clay cap designed to retard radon emissions and rainwater infiltration. Through FY 00, a Remedial Investigation/Feasibility Study (RI/FS) was initiated. Due to unanticipated site complexity, its scope has increased significantly. A revised total estimate will be prepared following completion of the FS.

FY 2001 funds are being used to continue the Remedial Investigation (including an additional phase because of additional contamination findings), to begin the feasibility study, to perform a geophysical and gamma walkover of the site, to perform an asbestos survey and removal action in Building 401, and to continue surveillance (chemical and radiological), maintenance, and provide appropriate security at the site.

FY 2002 funds will be used to complete the Remedial Investigation, to continue the feasibility study, to decontaminate and demolish Building 401,and to continue surveillance (chemical and radiological), maintenance, and provide appropriate security at the site.

Site remediation is scheduled to be completed in FY 2011**.

*** The total cost will depend upon the specific cleanup standards established for this site, taking into account input from federal, state, and local regulators, the general public, and other stakeholders. Once a final cleanup plan for the site has been approved in a Record of Decision, it will be possible to provide a more definitive estimate. The current cost estimate assumes that the cleanup will be completed by the date shown.**

**** The completion schedule will depend on the cleanup standards established for this site and overall funding constraints.**

Site	Total Estimated Federal Cost $	Allocation Prior to FY 2001 $	Allocation FY 2001 $	Tentative Allocation FY 2002 $	Additional to Complete After FY 2002 $
Seaway Industrial Park, Tonawanda, NY Buffalo District	25,376,000*	5,133,000	1,330,000	1,420,000	17,493,000

The Seaway Landfill, a closed sanitary landfill, is a privately owned 93 acre site in the Town of Tonawanda, 3 miles north of Buffalo, NY, that is contaminated, principally on 16 acres, with radiological waste, including thorium, uranium and radium. The waste that was disposed of at the site originated at the Linde Air Products plant, where uranium ore was processed. There are four areas associated with the Seaway Site - Areas A, B, C and D. Clean up of Area D was included in the Record of Decision for the remediation of Ashland 1 and Ashland 2. The total project cost estimate for the Seaway site, Areas A, B and C, based on leaving the materials in place and capping the disposal area has increased by $10, 915,000 reflecting the need for additional characterization data to support the anticipated remedial alternative, and the more detailed cost estimate prepared for the preliminary draft proposed plan. The project is being coordinated with the New York Department of Environmental Conservation, the New York State Department of Health, and the U.S. Environmental Protection Agency. Through FY 00, the Corps has initiated the Remedial Investigation/Feasibility Study and potentially responsible party investigations.

FY 2001 funds will be used to continue the Remedial Investigation/Feasibility Study, complete the characterization of the Areas A, B and C, and continue the potentially responsible party investigations.

FY 2002 funds will be used to complete the Remedial Investigation/Feasibility Study/Proposed Plan and to release a Proposed Plan for public review.

Site remediation is scheduled to be completed in FY 2004**.

*** The total cost will depend upon the specific cleanup standards established for this site, taking into account input from federal, state, and local regulators, the general public, and other stakeholders. Once a final cleanup plan for the site has been approved in a Record of Decision, it will be possible to provide a more definitive estimate. The current cost estimate assumes that the cleanup will be completed by the date shown.**

**** The completion schedule will depend on the cleanup standards established for this site and overall funding constraints.**

APPROPRIATION TITLE: Formerly Utilized Sites Remedial Action Program — Great Lakes and Ohio River Division

OHIO

Site	Total Estimated Federal Cost $	Allocation Prior to FY 2001 $	Allocation FY 2001 $	Tentative Allocation FY 2002 $	Additional to Complete After FY 2002 $
Former Harshaw Chemical Company, Cleveland, OH Buffalo District	43,295,000*	40,000	60,000	470,000	42,725,000

The former Harshaw Chemical Company is a privately owned, 40-acre site located approximately 5 miles southwest of downtown Cleveland, Ohio. The area is an industrial setting bordering the Cuyahoga River. From 1944 through 1959, the site used to perform work under contract with the Manhattan Engineering District (MED) and the Atomic Energy Commission (AEC) for the purpose of supporting the Nation's early atomic energy program. Various forms of uranium were produced for shipment to Oak Ridge, Tennessee, for isotopic separation and enrichment. In 1960, the site was released for unrestricted use by the AEC, following decontamination efforts by Harshaw, under the guidance of the AEC. The project is being coordinated with the Ohio Environmental Protection Agency and the Ohio Department of Health. A Preliminary Assessment (PA) recommending inclusion in FUSRAP was completed in FY 00.

FY 2001 funds are being used to initiate a Site Inspection.

FY 2002 funds will be used to complete the Site Inspection.

Site remediation is scheduled to be completed in FY 2007

*** The total cost will depend upon the specific cleanup standards established for this site, taking into account input from federal, state, and local regulators, the general public, and other stakeholders. Once a final cleanup plan for the site has been approved in a Record of Decision, it will be possible to provide a more definitive estimate. The current cost estimate assumes that the cleanup will be completed by the date shown.**

**** The completion schedule will depend on the cleanup standards established for this site and overall funding constraints.**

APPROPRIATION TITLE: Formerly Utilized Sites Remedial Action Program — Great Lakes and Ohio River Division

Site	Total Estimated Federal Cost $	Allocation Prior to FY 2001 $	Allocation FY 2001 $	Tentative Allocation FY 2002 $	Additional to Complete After FY 2002 $
Luckey, OH Buffalo District	151,239,000*	11,849,000	2,600,000	2,000,000	134,790,000

The Luckey Site is a privately owned 40-acre site located approximately 22 miles southeast of Toledo, Ohio. FUSRAP contamination on site consists of both radiological and chemical wastes. The primary radiological contaminants at the site areradium, uranium and thorium. The primary chemical contaminants at the site are beryllium and lead. In 1949, the Atomic Energy Commission constructed a beryllium production facility at the site. The waste solutions and sludge from the beryllium production operations were stored in lagoons on the plant property. Waste solutions were also discharged into Toussaint Creek. (In 1958, beryllium production operations ceased.) In 1951 and 1952, the site operator purchased 1,000 tons of radiologically contaminated scrap steel from the Lake Ontario Storage Area. The scrap steel is believed to be the source of radiological contamination. In 1958, beryllium production operations ceased. The Luckey project is being coordinated with the Ohio Environmental Protection Agency and Ohio Department of Health. Through FY 00, the Corps completed Remedial Investigation and initiated a Feasibility Study and potentially responsible party (PRP) investigations.

FY 2001 funds are being used to continue PRP investigations, complete a draft Feasibility Study for soils and groundwater, initiate the Proposed Plan for soils and groundwater, conduct ecological studies of Toussaint Creek, and complete an expanded site investigation of two residential properties.

FY 2002 funds will be used to complete the Feasibility Study and to complete public review of a Proposed Plan addressing soils and groundwater for the site and two affected nearby residential properties.

Site remediation is scheduled to be completed in FY 2008**.

*** The total cost will depend upon the specific cleanup standards established for this site, taking into account input from federal, state, and local regulators, the general public, and other stakeholders. Once a final cleanup plan for the site has been approved in a Record of Decision, it will be possible to provide a more definitive estimate. The current cost estimate assumes that the cleanup will be completed by the date shown.**

**** The completion schedule will depend on the cleanup standards established for this site and overall funding constraints.**

Site	Total Estimated Federal Cost $	Allocation Prior to FY 2001 $	Allocation FY 2001 $	Tentative Allocation FY 2002 $	Additional to Complete After FY 2002 $
Painesville, OH Buffalo District	13,861,000*	7,250,000	340,000	5,250,000	1,021,000

The Painesville Site is a privately owned 60-acre site located approximately 22 miles east of Cleveland, Ohio. In the early 1940's, the Defense Plant Corporation constructed a magnesium production facility on property owned by the Diamond Magnesium Company. The Diamond Magnesium Company received approximately 1,650 tons of FUSRAP-related radiologically contaminated scrap steel from the Lake Ontario Storage Area, which resulted in contamination of the site. The site is contaminated with radiological waste, including uranium, radium, thorium, and decay products. The site is currently owned by the Crompton Manufacturing Company, Inc., which closed this facility in July 1999. They are actively demolishing existing structures and will be performing environmental remediation for chemical contamination resulting from industrial activities on the site that are unrelated to any past Federal activities. 1,330 cubic yards of contaminated soils were removed from the site in the fall of 1998 under an Engineering Evaluation/Cost Analysis (EE/CA). The Corps initiated a focused Remedial Investigation/Feasibility Study (RI/FS) to determine the extent of additional contamination and establish the final cleanup criteria. The Painesville project is being coordinated with the Ohio Environmental Protection Agency and Ohio Department of Health.

FY 2001 funds are being used to complete the focused RI/FS and potentially responsible party (PRP) Investigations, develop/coordinate the final cleanup criteria, and initiate and complete the Proposed Plan.

FY 2002 funds will be used to coordinate and finalize the Record of Decision, develop the remedial design, and initiate and complete the remedial action for the site.

Site remediation is scheduled to be completed in FY 2002**.

*** The total cost will depend upon the specific cleanup standards established for this site, taking into account input from federal, state, and local regulators, the general public, and other stakeholders. Once a final cleanup plan for the site has been approved in a Record of Decision, it will be possible to provide a more definitive estimate. The current cost estimate assumes that the cleanup will be completed by the date shown.**

**** The completion schedule will depend on the cleanup standards established for this site and overall funding constraints.**

APPROPRIATION TITLE: Formerly Utilized Sites Remedial Action Program — Great Lakes and Ohio River Division

PENNSYLVANIA

Site	Total Estimated Federal Cost $	Allocation Prior to FY 2001 $	Allocation FY 2001 $	Tentative Allocation FY 2002 $	Additional to Complete After FY 2002 $
Shallow Land Disposal Area, Parks Township, PA Pittsburgh District	TBD*	0	80,000	1,000,000	TBD

The Shallow Land Disposal Area (SLDA) encompasses 40 acres of land located in Parks Township, Pennsylvania located about 23 miles northeast of Pittsburgh, PA. A nuclear fuel production facility located at Apollo, PA, generated wastes that were placed into a series of 10 trenches at the SLDA. The waste material was placed in the trenches from the period 1960 to 1970 and is believed to consist primarily of uranium and thorium associated with production of nuclear materials at the Apollo facility. The 10 trenches occupy an area of about 1.2 acres of the 40-acre Shallow Land Disposal Area. The site is currently owned by BWX Technologies, and licensed by the Nuclear Regulatory Commission.

In FY 2001, a Preliminary Assessment (PA) is being undertaken to determine whether a response action under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) is appropriate to address any FUSRAP related materials in the SLDA.

In FY 2002, a Site Inspection and/or Remedial Investigation/ Feasibility Study (RI/FS) will be initiated, if the Corps determines in the PA that a response action under CERCLA is appropriate or that additional information regarding the nature of the contamination is required.

Schedule for completion of site remediation is to be determined**.

*** The total cost will depend upon the specific cleanup standards established for this site, taking into account input from federal, state, and local regulators, the general public, and other stakeholders. Once a final cleanup plan for the site has been approved in a Record of Decision, it will be possible to provide a more definitive estimate. The current cost estimate assumes that the cleanup will be completed by the date shown.**

**** The completion schedule will depend on the cleanup standards established for this site and overall funding constraints.**

Justification Of Estimates for Civil Functions Activities
Department of the Army, Corps of Engineers
Fiscal Year 2002
($000)

APPROPRIATION TITLE: General Expenses

	FY 2001 Allocation*	FY 2002 Budget	Change FY 2000-2001	Percent Change
1. Executive Direction and Management				
a. Headquarters, U.S. Army Corps of Engineers				
Baselevel Operating Expenses	$ 59,752	$ 61,071	$ 1,319	2.2%
Civil Program Accounts	2,000	2,000	0	0.0%
Total	$ 61,752	$ 63,071	$ 1,319	2.1%
b. Major Subordinate Commands	$ 78,453	$ 75,936	$ - 2,517	- 3.2%
2. Other Activities				
a. U.S. Army Engineer Research & Development Center (ERDC)	195	$ 197	$ 2	1.0%
b. Humphreys Engineer Center Support Activity	$ 15,597	$ 13,646	$ - 1,951	- 12.5%
c. Institute of Water Resources	$ 3,081	$ 4,958	$ 1,877	60.9%
d. USACE Finance Center	$ 984	$ 992	$ 8	0.8%
TOTAL:	$160,062	$158,800	$ - 1,262	- 0.8%

*The FY 2001 allocation represents distribution of the appropriated level of $151,665,600 plus $12,397,996 from prior year unexpired funds to supplement the appropriation amount due to offsetting the impacts of inflation, higher than budgeted pay increases, potential increased costs due to offering relocation services under the Defense National Relocation Program for vacancies and Plant Replacement and Improvement program payback costs for the Headquarters move.

APPROPRIATION TITLE: General Expenses

1. Executive Direction and Management

a. Headquarters, U.S. Army Corps of Engineers	FY 2001 Allocation	FY 2002 Request
(1) Baselevel Operating Expenses:	$59,752	$61,071
(2) Civil Works Program Accounts:	2,000	2,000
	$61,752	$63,071

The Headquarters, U.S. Army Corps of Engineers is responsible for providing policy, guidance, and oversight of a comprehensive Civil Works Program. This mission is decentralized across the Corps of Engineers in 37 districts, 8 major subordinate commands (MSCs), and several field operating activities. The Headquarters, U.S. Army Corps of Engineers assists field offices by providing policy formulation and oversight, national programs management, preparation of the annual budget and legislative submission, national and international interface, management of high interest or controversial projects or issues, resource analysis and distribution, oversight of execution, and performance measurement. In addition to the traditional Civil Works mission, beginning in FY 1998, the Chief of Engineers was given responsibility for the Formerly Used Sites Remedial Action Program (FUSRAP) previously managed by the Department of Energy.

The amount requested for the Headquarters, U.S. Army Corps of Engineers for FY 2001 consists of two components: the baselevel operating expenses of $61,071,314; and the Civil Program Accounts amounting to $2,000,000. The Program Accounts were established in FY 1995 as an outgrowth of disestablishing the Centralized Accounts, which were centrally managed at headquarters and billed back across the Corps. For expediency purposes, those activities essential to supporting the Civil Works mission were deemed appropriate for direct-funding from the General Expenses account and were presented in detail in the FY 1996 budget justification data. Activities funded in the Program Accounts for FY 2002 consist primarily of Civil Works Automated Systems Maintenance, Civil Policy Guidance Update Program, and maintenance of a USACE standard set of construction guide specifications. Beginning in FY 1999, fiscal management of jointly funded programs was transferred to the respective functional proponent. Amounts for these have been included in operating expenses and include approximately $1,700,000 for USACE-wide Training and Professional Development, approximately $800,000 for information technology/automated information systems, approximately $360,000 for real estate specific automated information systems, and approximately $60,000 for the Standard Procurement System. These activities continue to undergo close scrutiny to ensure they meet the criteria for Program Account funding and are minimally funded to meet essential mission needs.

The Corps is continuing its efforts to streamline executive direction and management functions at all levels. The Headquarters projected staffing level for FY 02 is 425 FTE. This is a 13% reduction from the FY 97 level of 487. These reductions have been accomplished through focusing on appropriate roles and missions and eliminating duplication of effort, reducing the number of division offices from 11 to 8, and continual process reviews to achieve additional savings through efficiencies.

APPROPRIATION TITLE: General Expenses

1. **Executive Direction and Management** (Continued)

a. Headquarters, U.S. Army Corps of Engineers

	FY 2001 Allocation	FY 2002 Request
	$61,752	$63,071

The breakout of cost differences for the Headquarters by category of expenses is shown below.

Change	
$ 2,329	- Personnel compensation and benefits
- 298	- Travel and transportation
- 562	- ADP, training and other contractual services
- 150	- Printing and reproduction, supplies and materials
$ 1,319	

(1) Cost differences: The FY 2002 budget reflects a flat staffing level in the headquarters of 425 FTE which started in FY 2001. The $63,071,314 requested for expenses of the Headquarters, U.S. Army Corps of Engineers, includes $47,519,499 for personnel compensation and benefits for civilian personnel and military officers, and $15,551,815 for other costs. The other costs include:

$ 1,271	- Travel and transportation
640	- Printing and reproduction, supplies and equipment
13,641	- ADP, training, and other contractual services
$15,552	

APPROPRIATION TITLE: General Expenses

1. Executive Direction and Management (Continued)

b. Major Subordinate Commands

FY 2001 Allocation	FY 2002 Request
$78,453	$75,936

Major subordinate commands (MSC) provide the managerial and technical direction required for supervision of subordinate district offices and coordination of regional activities necessary to execute the Civil Works Program. The Executive Direction and Management activities are currently decentralized to 8 MSC throughout the United States.

In accordance with the Energy and Water Development Appropriations Act for 1996 (Public Law 104-46), the Secretary of the Army approved a plan to reduce the number of division offices from eleven to eight, with each division supervising at least four districts, and without changing the functions of the districts. This division restructuring plan was implemented beginning in FY 1997 with full implementation to be phased in over the next five years. With full implementation of the 8 division office structure, the divisions will have reduced to 546 FTE, (a decrease of 15 FTE from the 2001 level of 561). This staffing level will support an average civil staffing per division of 75 FTE with the exception of the Pacific Ocean Division, which has a primarily military mission.

The breakout of cost differences for the Division Offices by category of expenses is shown below.

Change	
$ 468	- Personnel compensation and benefits
573	- Rent, utilities, and communications
- 225	- Printing and reproduction, supplies and equipment
- 650	- Travel and transportation
- 2,684	- ADP, training, and other contractual services
$ - 2,518	

The $75,935,596 requested includes $53,671,872 for personnel compensation and benefits for civilian and military personnel, and $22,263,724 for other costs. Labor costs reflect increases for higher than budgeted pay raises and potential increased costs due to offering relocation services under the Defense National Relocation Program. Other costs include:

$ 4,280	- Rent, communications, and utilities
3,653	- Travel and transportation
1,261	- Printing and reproduction, supplies and equipment
13,070	- ADP, training, and other contractual services
$ 22,264	

APPROPRIATION TITLE: General Expenses

2. Other Activities

FY 2001 Allocation	FY 2002 Request
$19,857	$19,793

Other activities include: the Humphreys Engineer Center Support Activity (HECSA) which provides administrative support to Corps tenants of the Humphreys Engineer Center and to Corps headquarters; the Institute of Water Resources (IWR) which provides a variety of water management functions such as conducting and managing national studies, special studies in support of the Civil Works mission, data collection and distribution, and technical support to other Corps offices in matters dealing with water resource management; and the US Army Corps of Engineers Finance Center (UFC) which was established in 1996 in Memphis, TN, to centralize the finance and accounting activities Corps-wide. The intent of Defense Management Resource Decision (DMRD) 910 has been completely satisfied by virtue of the consolidation and functional alignment of the UFC. Therefore, the Defense Finance and Accounting Service (DFAS) and the Corps have agreed that the UFC will not be capitalized as previously intended. Consequently, the 10 GE funded FTE's for the UFC remain in the required staffing targets. The General Expenses account provides funds only for those FTE supporting headquarters missions. These activities will have further reduced their staffing from 131 FTE in FY00 to 122 FTE in 2002.

The amount requested for these activities for FY 2002 is $19,793,119, which is a net decrease of $63,894 from the FY 2001 allocation of $19,857,013. Variances from the previous year represent the cost of pay increases and inflation, $1.8 million for the continuation of the peer review and planning methodology studies by the National Academy of Sciences (NAS); mandated by Section 216 of the Water Resources Development Act of 2000, P.L. 106-541; plus the increase due to the $4.6 million Plant Replacement and Improvement Program (PRIP) paybacks. The PRIP items are a second installment of a 5-year payback for the Headquarters move to the GAO building, the Electronic Data Management System (EDMS) equipment purchase which will reduce the amount of office space required; and the HQ USACE LAN centralization equipment purchase. However, these increases are partially offset by staffing reductions and lower rent costs due to the Headquarters move to the GAO building.

Changes	
$ 471	- Personnel compensation and benefits.
- 509	- Rent, utilities, and communications.
- 22	- Travel and transportation of goods.
- 4	- Printing and reproduction, supplies and equipment.
$ - 64	

Breakdown of the total $19,793,119 request for these support activities includes $8,213,390 for personnel

APPROPRIATION TITLE: General Expenses

2. Other Activities (Continued)

compensation and benefits for civilian and military personnel and $11,579,729 for other costs. The other costs include:

$ 2,133	-	Rent, communications, and utilities (includes HQ payments also)
92	-	Travel and transportation of goods
15	-	Printing and reproduction, supplies and equipment
9,340	-	ADP, training, other contractual services, PRIP payback & $1.8M for NAS study.
$11,580		

APPROPRIATION TITLE: REVOLVING FUND - PLANT REPLACEMENT AND IMPROVEMENT PROGRAM (PRIP)

1. Explanation of Revolving Fund. The Revolving Fund, which was established by Congress in 1953 (Public Law 153, 83rd congress – 67 Stat. 199), replaced the Plant Allotment Account authorized by the Secretary of War, on 13 December 1934, which had in turn replaced the Plant Program - Appropriation Basis which was in use prior to 1934. The two systems, prior to the establishment of the Revolving Fund, did not prove to be successful, because the accounting procedures necessitated by the systems were cumbersome and resulted in a distorted picture of costs when plant was transferred from one appropriation to another.

Essentially, PL 153 provided that the Revolving Fund assume the total capital value of $127.9 million in 1953, consisting of the unexpended cash balance ($25.3 million) and the net value ($102.6 million) of the assets and liabilities of the plant accounts; and to perform all future services, as a separate entity, within its own resources. The Plant Replacement and Improvement Program of the Revolving Fund, or PRIP, has proven to be an effective means of providing equipment and materials needed on more than one project. Some advantages of the system are: (1) Simplifies funding and accounting procedures; (2) Provides a means for plant rental which considers plant replacement costs; (3) Eliminates distorted project costs when plant is not used entirely on a single project throughout its economic life; and (4) Permits plant to be available on a timely basis to meet changing workload requirements.

The concept of the Revolving Fund is for it to operate within its own resources, rather than from annual appropriations. The Fund owns all the land, structures, dredges, other floating plant, aircraft, fixed and mobile land plant, tools, office, furniture, special equipment, and computers, that serve two or more Civil Works projects. In order for the Revolving Fund to acquire and replace the above items, it is necessary that the user project or appropriation be charged a fee for the actual time the equipment is used. This fee consists of operating and fixed costs. The operating costs are reimbursed to the Revolving Fund without any surcharge. The fixed or capitalized costs include depreciation, based on the straight-line method and a plant replacement increment factor to provide for future increased costs of replacement items due to inflation. When planned expenditures exceed the income producing capability of the Fund, additional direct appropriations are requested.

When the Revolving Fund was established, Congress authorized a capital limitation or ceiling (Corpus) of $140.0 million for the Fund. The capital value or corpus is the total assets, less liabilities and reserves. The $140.0 million ceiling was adequate until 1965, when increased workload and inflation required that the Corps of Engineers request annual increase in the corpus ceiling. These requests were generally granted. The limitations on the corpus ceiling value limited the income that could be generated from plant rentals, which, in turn, adversely affected the overall management of the Fund. Therefore, the Corps recommended that an annual capital expenditure ceiling be substituted for the corpus ceiling. Congress granted the request in FY 1979. Starting with FY 1985, expenditure ceilings were replaced by estimates of expenditures. Starting in FY 1994, the Corps replaced the estimate of expenditures by an estimate of obligations. This was done in accordance with recommendations of the General Accounting Office that the Corps change to obligations accounting within the Revolving Fund.

2. The Revolving Fund is operated in the Divisions, Districts, and separate Field Offices, the Waterways Experiment Station, and the Cold Regions Research and Engineering Laboratory. The fund incurs the expenses of acquisition, rehabilitation, operations, and maintenance of multiple use structures, such as warehouses, shops, garages, and laboratories; the expenses of acquisition, rehabilitation, operations, and maintenance of general-purpose plant, such as dredges, tugs, launches, trucks, cranes, bulldozers, and other construction equipment; and the general expenses of District offices.

3. FY 2001 and FY 2002 (Items costing $700,000 or more)

a. Land and Structures:

(1). Coastal and Hydraulic Laboratory Headquarters Building – Waterways Experiment Station (Continuing). The U.S. Army Waterways Experiment Station Coastal Engineering Research Center and Hydraulics Laboratory were merged in 1996 to form the Coastal and Hydraulics Laboratory, the largest water resources research and development laboratory in the world. The principal objectives of the merger were to foster team approaches to addressing complex water resources issues; to streamline management and eliminate duplication in technical methods, support staff, support systems and infrastructure and create synergy. These objectives are essential in the support of the Corps civil works mission. Progress has been hampered significantly because the two former organizations remain physically located in their pre-merger buildings approximately .5 miles apart by road. While some goals of the merger have been achieved, management and administration of the new organization has become more complex and less efficient because of the physical separation. The additions and betterments to the present Coastal Hydraulics Laboratory complex of buildings will allow full and complete consolidation of all personnel and equipment under one roof for maximum efficiency. The economic analysis comparing the cost of the proposed additions and betterments to the status quo supports the former based on a savings to investment ratio of 2.23 and a discounted payback period of 10.4 years. The net present value of the additions and betterments is $15.3 million, which is $8 million less than net present value of the status quo. Total cost estimate is $7,700,000. FY 2001: $700,000 to initiate and complete design. FY 2002: $3,000,000 to initiate construction. Future years: $4,000,000 to complete construction.

(2). ESTEX Hyperflume Research Facility - Waterways Experiment Station (Continuing). The USACE Waterways Experiment Station (WES) hydraulics, coastal and environmental research is increasingly directed to problems of time varying stratified flow and transport in rivers, reservoirs, and estuaries. ESTEX is needed to make progress in a number of areas. The WES Hydrodynamic and Sedimentation Experimental Hyperflume Research Facility (ESTEX) will be one of the world's premier experimental facilities for highly unsteady flow and transport research. It will be the hub of a 20 to 25 year research program providing R&D products that are essential to keeping USACE projects safe, effective, and environmentally sound in the 21st century. The facility will be a major resource for the Corps and national research in studying processes of solving problems in water resources. The facility will consist of four units with total length of approximately 500 ft. The final design was accomplished in consultation with expected users, which includes other government agencies and academia, through correspondence and presentations at national and international conferences. Primary economic analysis of constructing the ESTEX shows a savings/investment ratio of 4.84 and a discounted payback period of 4.6 years. The Net Present Value (NPV) of using the existing facility is $13.8 million, the NPV to build the ESTEX is $3.6 million. Total estimated cost: $4,000,000. Through FY 2000: $1,986,000 for design and initiate construction. FY 2001: $1,514,000 to substantially complete construction. FY 2002: $500,000 to complete construction.

(3). Dock Front Rehabilitation - Pittsburgh District (Continuing). The Pittsburgh Engineer District Warehouse and Repair Shops (PEWARS) is located at mile 7.5 on the Ohio River. It is a revolving fund owned facility, which supports the district mission of maintaining 23 civil works navigation projects and 327 miles of navigable river. The dock front wall at PEWARS is a 1,380 ft. long sheet pile cell design, constructed in 1942 as a part of a U.S. Navy outfitting dock-yard later acquired by the Corps. A field investigation of the condition of the cell wall and crane foundations located atop the wall was performed in 1993. This study revealed significant deterioration of the sheet pile material. Deterioration of the sheet piling has reached the point where over-stressing can occur under present operating conditions and where corrective actions should be initiated. The most effective repair alternative studied is to construct a tied-back sheet pile wall riverward of the existing sheet pile cells. This repair will restore the design strength of the wall and provide for an additional 50-years of useful life. If no repairs are made to the dock front facility, the crane capabilities at the waterfront will be lost and with it, the District's capability of transferring heavy equipment and materials to and from the warehouse and repair shops to the floating plant in support of major maintenance of the civil works projects served. Three alternatives were considered. The alternative #1, New Tied-Back Wall provides a solution for 50 years at a net present value of $8.3 million. Alternative # 2, Strap Existing Wall, while less expensive,

with a net present value of $7.0 million, only provides a solution for 25 years. Total estimated cost: $5,630,608. Through FY 2000: $5,163,608 for design and substantially complete construction. FY 2001: $467,000 to complete construction.

(4). Fort Mifflin Replacement Warehouse - Philadelphia District (Continuing): In April of 1994, the Fort Mifflin Warehouse Building No.4 and its contents were destroyed by fire. Warehouse Building No. 4 was a storage facility for spare parts and emergency operations support items. Since the damaged building, which was completely razed, was essential to District operations and maintenance services, a replacement warehouse/file-storage building is required. The proposed replacement facility will be a prefabricated metal structure constructed on the existing 16,000 square foot concrete foundation, which has been found structurally sound and did not sustain any damage as a result of the fire. In addition, a file storage area of approximately 5,000 sq. ft. has been identified and will be used to alleviate the high storage costs ($140,000/year) currently incurred because leased space is used. An area of approximately 600 square feet for the storage of flammable materials has also been identified to comply with safety and fire prevention requirements. The current water supply cannot provide adequate fire protection for the present occupancy of the Fort Mifflin Project Office (FMPO) and the Distribution Center (FMDC). The warehouse replacement project includes installation of a new 10-inch (minimum) water main to FMPO/FMDC and will provide a clean, reliable and virtually maintenance-free water supply for automatic sprinkler systems. The existing main access road to the FMDC/FMPO facilities routes traffic past Olde Fort Mifflin. The warehouse replacement project also includes construction of an access road and fencing to alleviate the safety concerns regarding school buses; the presence of children crossing the existing entrance to Old Fort Mifflin; and to prevent unauthorized persons, or thieves from wandering onto the FMPO/FMDC facilities. Total Estimated Cost: $4,225,360. Through FY 2000: $4,125,360 for design, to initiate and substantially complete construction. FY 2001: $100,000 to complete construction.

(5). Alaska District Headquarters Building Addition - Alaska District (Continuing). A 17,100 square foot addition is requested to replace inadequate office space in buildings housing Real Estate and Regulatory personnel. Real Estate personnel are located in a building owned by Elmendorf AFB, about a mile and a half away from the main headquarters building, which they have indicated that we must vacate by FY 1999. Regulatory personnel are located in a warehouse building adjacent to the main headquarters building which was converted for use as office space. The main headquarters building was constructed in the late 1940's by the Air Force but has been owned and occupied by the Corps ever since. It was completely renovated in the late 1980's using PRIP funds. The Alaska District looked at a number of options for more satisfactorily meeting its space requirements, including, leasing an additional 17,700 from GSA, leasing sufficient space to accommodate the entire district from GSA, and constructing a new facility using space available on an installation in the Anchorage area. Of these alternatives the lease costly was the recommended alternative of constructing an addition. The alternative of leasing the additional 17,700 space from GSA, in addition to being more costly, had the further disadvantage of requiring that the personnel assigned to the leased space would be 4 or 5 miles distant from the main building because such leased space would be located in downtown Anchorage rather than in the vicinity of Elmendorf AFB. Total estimated cost: $5,665,278. Through FY 2000: $5,604,378 for design and substantially complete construction. FY 2001: $60,900 to complete construction.

b. Airplanes

(1). Airplane Replacement - Lower Mississippi Valley Division (New). The Mississippi Valley Division (MVD) operates one of two Corps-owned aircraft. Corps ownership of up to four aircraft was authorized in 1954 by the Act that established the Revolving Fund. The MVD aircraft is a 40 year-old Gulfstream (G-1), twin turboprop aircraft, which the Corps acquired in 1973. Annual usage averages 300 hours. Continued aircraft ownership is justified in accordance with the requirements of OMB Circular A-126 by the Corps emergency response mission. Scheduled service and charter service are not viable options to meet emergency response requirements. In recent years, the aircraft has been used to support FEMA hurricane and other disaster recovery operations throughout the Southeast, Puerto Rico and the U.S. Virgin Islands. Non-mission usage is permitted when cost effective. During FY 00, the Corps saved $281,000 using the G-1 over the cost of the same travel via commercial carriers. The aging aircraft is expensive to operate and is becoming more expensive to maintain. Replacement parts and service suppliers are difficult to obtain which affects mission readiness and reliability. A Corps study of new and used aircraft (< ten years old) establishes that replacement aircraft are available which will meet MVD mission requirements and cut hourly operating costs in half. Total estimated cost: $4,315,000. FY 2002: $4,315,000 to initiate and complete construction.

(2). Airplane Replacement - Northwestern Division (New). The Northwestern Division (NWD) operates one of two Corps-owned aircraft. Corps ownership of up to four aircraft was authorized in 1954 by the Act that established the Revolving Fund. The NWD is a 30 year-old Swearingen, Merlin IV twin engine aircraft that was purchased in 1971. Annual usage averages 400 hours. Continued aircraft ownership is justified in accordance with the requirements of OMB Circular A-126 by the Corps emergency response mission. Scheduled service and charter service are not viable options to meet emergency response requirements. The aircraft is used to facilitate the inspection, supervision and conduct flood fighting, flood control, and navigation operations mission of the Division. In addition, in recent years, the aircraft has been used to support FEMA. Non-mission usage is permitted when cost effective. During FY 00, the Corps saved $384,000, using the Merlin IV, over the cost of the same travel via commercial carriers. The NWD aircraft is nearing the end of its economic life and is becoming more expensive to maintain. The aircraft has reached the age where most parts are difficult to obtain which affects mission readiness and reliability. A Corps study of new and used aircraft (< ten years old) establishes that replacement aircraft are available which will meet NWD mission requirements and reduce maintenance costs. Total estimated cost: $2,540,000.

FY 2002: $2,540,000 to initiate and complete construction.

c. Dredges

(1) Dredge ESSAYONS Control System Replacement MDC 2482 - Portland District (Continuing). The Dredge ESSAYONS has been in service since 1983. At delivery from the shipyard, automated systems were state of the art. However since 1983, automation associated with dredging systems have evolved significantly. Dredge ESSAYONS is still operating with much of its original automated dredge control and monitoring systems. Over time some of the systems have been either modified or upgraded or bypassed or abandoned. The major problem associated with the age of the systems is that replacements for some components necessary to run the systems are no longer commercially available. Replacement of the dredging system automation is required to allow continued operation of the dredging system. The economic analysis showed without the upgrade, the original dredging automation is estimated to fail in the next 3 to 5 years, and the vessel will be unsafe to operate with loss of revenue is estimated at $40.5 million a year. Total estimated cost: $3,975,000. Through FY 2000: $66,000 to initiate and complete design. FY 2001: $3,386,000 to initiated construction. FY 2002: $523,000 to complete construction.

(2) Dredge McFARLAND Longitudinal Seam Replacement – Philadelphia District (Continuing). The McFARLAND is one of four Corps of Engineers hopper dredges, and the only one operating on the East Coast. It requires the replacement of a longitudinal structural seam in order to maintain the ship's integrity and prevent the possibility of leaking contaminants into the sea. The McFARLAND was originally constructed with a riveted lap seam strake running along the hull. Over the past thirty years this riveted strake has experienced wastage from moisture on the inside and wear on the outside, consequently is scrutinized by the U.S. Coast Guard during vessel dry-dock inspections. The wastage has created a leakage condition. These leaks were locally repaired during previous shipyard periods, but are a problem that is becoming more prevalent. Although, in the past, the Corps of Engineer has been able to obtain a waiver, the Coast Guard has become increasing reluctant to pass the McFARLAND without major repairs made to the strake. The only permanent way to correct the problem is to replace the riveted strake. Replacement of the strake will allow the McFARLAND to pass Coast Guard inspections; will increase the level of vessel safety and alleviate potential hazard to the environment. Only two alternatives were considered, the status quo, which involves continuing to maintain and repair existing riveted lap seam strake, and replacement of the strake. The net present value of the replacement alternative, $172.4 million, is slightly less than the status quo, $173.9 million. More importantly it is a permanent repair which eliminates the need for a waiver from Coast Guard requirements and effectively reduces the possibility of fuel oil leakages. Total estimated cost: $1,525,000. FY 2002: $1,500,000 for design and initiate construction. Future years: $25,000 to complete construction.

(3) Dredge WM. A. THOMPSON Repowering – St. Paul District (Continuing). The Dredge WM. A. THOMPSON was built in 1937 and repowered in 1966. The dredge is a 62-year-old self-propelled dredge and part of the Corps' Minimum Dredge Fleet. It has consistently proven itself to be the most cost-effective method of maintaining the 9-foot Mississippi River navigation channel in both the St. Paul and Rock Island Districts. In 1996 the THOMPSON was competitively bid against industry. Continued use of the THOMPSON would save the Government $3 million annually. The existing power plant, after 33 years of use, must be

replaced to reduce operating costs and downtime required to make repairs. Spare parts are also becoming increasingly scarce. In addition to the proposed repowering, other production improvements will be effected at the same time, including the installation of a more efficient dredge pump, propulsion power increases, and electrical updates. Repowering efforts are expected to increase the useful life by thirty years with net long-term savings of $22 million. An economic analysis of repowering shows a discounted payback period of 4.8 years, and savings to investment ratio of 5.09. The net present value of the status quo is $82,324,300, compared with $64,519,500 for the proposed repowering. Total estimated cost: $12,400,000. Through FY 2000: $93,400 to initiate design. FY 2001: $430,000 to complete design. FY 2002: $10,265,000 to initiate construction. Future years: $1,6116,600 to complete construction.

(4) Repower Dredge POTTER, MDC 2375 - St. Louis District (Continuing): The obsolete, 1930's vintage steam power plant on the POTTER is under-powered, unreliable, expensive to operate and very difficult to maintain. This project will employ current technology to modernize the vessel's power plant, and increase the efficiency of both its propulsion and dredging systems. The dredge will be used indefinitely. The daily rate for the repowered dredge is projected at $33,200 per day, vice the current rate of $37,000 per day. The dredge uses an average of 6,200 gallons of fuel per day, which can be reduced to 2,400 gallons per day by repowering with a diesel electric configuration. The annual repair costs, presently in the $1 million to $1.5 million range, decrease to the annual estimated $500,000 repair cost of a repowered dredge. The total annually estimated savings in repairs, fuel, labor and plant increment is $1.5 million. Based upon a cost differential (savings) of $180 million over the life of the repowered dredge and a present value of savings of $31 million, it is recommended that the Dredge POTTER be repowered with a diesel electric configuration. Total estimated cost: $21,946,700. Through FY 2000: $21,846,700 for design and substantially construction. FY 2001: $100,000 to complete construction.

(5) Dredge Ladder Extension for the JADWIN, MDC 2276 - Vicksburg District (Continuing): The dredge ladder will be extended from 58' to 75' to enable maintaining the recently deepened 45' navigation channel from Baton Rouge to New Orleans. Lengthening is required because dredging must be accomplished when river stages are still high in order to maintain the authorized depth at low stages. The present practice is to start dredging as soon as the dredge can reach the river bottom, but with the 58' ladder sometimes this is allows maintaining only a 250' wide channel, which presents problems to the shipping industry and increases the likelihood of collisions and groundings. Modifications will be accomplished during the lay up period, which normally runs from December to June. Total estimated cost: $1,090,000. Through FY 2000: $26,200 to initiate design. FY 2001: $500,000 for design. FY 2002: $150,000 to complete design. Future years: $413,800 for construction.

(6) Dredge Ladder Extension for the HURLEY, MDC 2450 - Memphis District (Continuing): All modifications necessary will be made to increase the dredge depth of the HURLEY from 40' to 75'. This involves lengthening the existing dredge ladder, extending the hull to accommodate the longer ladder, and modifying the ladder hoisting mechanism. As presently equipped the HURLEY can effectively be utilized only to dredge the shallow draft channel of the Mississippi River. The ladder extension will allow the HURLEY to be used to maintain the deep draft channel from Baton Rouge to New Orleans, extending its useful dredge season to about 250 days per year. Modifications will be accomplished during the lay up period, which normally runs from December to June. Total estimated cost: $8,000,000. Through FY 2000: $612,300 for design. FY 2001: $7,000,000 to initiate construction. FY 2002: $350,000 for construction. Future years: $37,700 to complete construction.

d. Other Floating and Mobile Land Plant:

(1) PEWARS Dock Crane Replacement – Pittsburgh District (New). The PEWARS (Pittsburgh Engineer Warehouse and Repair Shops) is located on the Ohio River, Neville Island, PA. This facility supports the Pittsburgh District mission of maintaining 23 navigation facilities, 327 miles of navigable river and 15 flood control facilities. The dock crane is used daily to load and unload the government repair fleet between major maintenance jobs, to load and unload government materials, parts and supplies from contractor equipment servicing civil works projects, and to provide heavy lifting capacity at the dock front and the general capability to move parts, supplies and material within the warehouse facility. The dock front at PEWARS was originally serviced by two (2) 30-ton capacity rail mounted portal cranes erected in 1946. One crane was decommissioned in 1993 due to poor structural condition and was subsequently cannibalized for parts to

keep the other crane in service. The facility is currently serviced by the remaining crane and a 30-year-old crawler crane. The scope of work performed at districts' navigation facilities continues to increase as the facilities age. This increased scope over the past 35 years has outpaced the lifting capacity of existing equipment and if not upgraded it will seriously impair the mission of the district. The economic analysis evaluated seven alternatives that ranged from status quo to privatization to acquisition through lease or procurement. The recommended alternative is replacement of remaining portal crane and crawler crane with a heavy lift stevedoring crane. This alternative was recommended over the slightly cheaper heavy lift stationary crane because its mobility will enable it to better meet the transfer needs at the Pittsburgh Engineer Warehouse and Repair Shops. Total estimated cost: $2,582,000. Through FY 2000: $55,000 to initiate design. FY 2001: $42,000 for design. FY 2002: $1,242,500 to initiate construction. Future Years: $1,242,500 to complete construction.

(2) Towboat M/V George W. Britton Replacement MDC 2350– Huntington District (New). The M/V George W. Britton (Towboat 71) is used to transport the Huntington District's Repair Fleet Floating Plant to perform scheduled and emergency maintenance to 400 miles of navigable channels and navigation structures on the Ohio and Kanawha Rivers. Huntington District's Floating Plant has increased in physical size, capacity and tonnage in recent years to nearly double its original size. The current power system on the Towboat provides 1200 horse power rating. Operations presently require two trips to transport existing floating plant from one project to another during high water periods. During these high water periods the Britton's rate of travel is often slowed to less than on (1) mile per hour pushing on one-half the Fleet. The under-powered condition of the Britton impairs the ability of the vessel master or pilot to move the fleet safely and efficiently. The economic analysis was done to compare to cost of keeping the existing towboat; re-powering; or the replacement thereof. The economic analysis showed that re-powering the Britton was slightly cheaper than the cost of acquiring a new towboat. However, rep-powering would only extend the useful life of the Britton by ten years. By contrast a new towboat has a 40-year life. Total estimated cost: $5,730,000. Through FY 2000: $20,000 to initiate design. FY 2001: $10,000 for design. FY 2002: $5,270,000 completes design and initiate construction. Future Years: $430,000 to complete construction.

(3) Derrickboat No. 49 Replacement MDC 2313 - Huntington District (New). The Derrickboat No. 49 is used to perform in house and major maintenance for nine (9) navigation structures on the Ohio and Kanawha Rivers and for timely response to breakdowns and emergency work required to keep 400 miles of navigable channels open to navigation. Derrickboat No. 49 was built in 1951 and at 49 years old is reaching the end of its economic life. Technology and government standards have changed significantly since No. 49 was constructed, which necessitates expensive modifications and retrofitting. In addition, many of its parts and operating systems are now obsolete and replacement parts are difficult to obtain. Also, the existing derrickboat does not have sufficient capacity to handle the more massive components such as culvert valves, maintenance bulkheads, and dam operating equipment. An economic analysis was done to compare the cost of acquiring a new derrickboat with the cost of a complete rehabilitation of the existing derrickboat. This economic analysis showed that acquisition of a replacement derrickboat was more cost effective (NPV savings of $15.5 million) than rehabilitation of the existing boat. Total estimated cost: $2,545,000. Through FY 2000: $23,900 to initiate design. FY 2001: $22,000 for design. FY 2002: $2,289,000 to complete design and initiate construction. Future Years: $220,100 to complete constructions.

(4) Surveyboat ESSAYONS Replacement MDC 2529 – Philadelphia District (New). The Surveyboat ESSAYONS is used to perform hydrographic surveys and extract bottom soil samples for maintaining the navigational waterways within the Philadelphia District. These waterways include the Delaware River and Bay, the Chesapeake and Delaware Canal and the upper Chesapeake Bay. The Surveyboat ESSAYONS was built in 1965 and is now 35 years old. Due to its advancing age the Surveyboat ESSAYONS requires frequent expensive maintenance and repair and parts are becoming difficult to acquire. The general condition of the Surveyboat will continue to deteriorate and will be subject to frequent and costly breakdowns, which will impact the efficient surveying and maintenance of the Philadelphia District's waterways. The economic analysis was done to compare to cost of keeping the existing vessel or the replacement thereof. The economic analysis showed replacement of the Surveyboat ESSAYONS was the more cost effective than maintenance of the status quo, with a NPV savings of approximately $650,000. Total estimated cost: $1,020,000. Through FY 2000: $5,000 to initiate design. FY 2001: $25,000 to complete design. FY 2002: $990,000 for construction.

(5) Towboat M/V LIPSCOMB Replacement – Vicksburg District (New). The M/V LIPSCOMB is used in support of revetment construction and maintenance along approximately 1,000 mile of navigable channels on the Mississippi, the Atchafalaya and Red Rivers and Channel Patrol on the Mississippi River. The M/V LIPSCOMB was built in 1958 and is now 42 years old and has outlived its normal economic life by 2-1/2 years. Furthermore the LIPSCOMB has zero compartment floodability which constitutes a major safety issue for crew and passengers. Current Corps standard is one-compartment damage stability for this type vessel. The proposed replacement would have increased horsepower and a modernized hull design for increased towing and operational efficiency. The new vessel would also permit a reduction in the crew size. An economic analysis was done to compare to cost of keeping the existing vessel with the cost of acquiring a replacement. It showed that replacement of the LIPSCOMB was more cost effective, with a NPV of $35.8 million, 20% less than the alternative, than maintaining the status quo. Total estimated cost: $5,500,000. FY 2001: $10,000 to initiate design. FY 2002: $5,170,000 to complete design and initiate construction. Future Years: $320,000 to complete construction.

(6) Six (6) Deck Cargo Barges Replacement MDC 2543 – Rock Island District (New). Deck Cargo Barges are used to transport riprap to repair and construct water control structures on the upper and Mississippi and lower Illinois Rivers. This is necessary for the maintenance of the 9' channel required for navigational traffic. The six barges to be replaced (545, 549, 653, 900, 901 and 903) are no longer serviceable. They have developed structural problems with the deck plate and internal bulkheads due to years of rough usage being loaded with heavy rock, up to 400 LBS. The Fish and Wildlife Service has recommended the use of heavier rock (up to 700 LBS) for repairs and bank protection. The extended use and increase poundage will cause additional wear and caving of the deck surfaces of the old barges, which may precipitate early retirement from service before a catastrophic failure occurs. The loss of the barges represents a loss of capability of 25% with a loss of efficiency of 35% due to increase in time to transport material. The economic analysis was done to compare the cost of replacing the 6 barges with cost to remove the barges from service and contract out the mission essential work. The economic analysis showed replacement of the barges was the most cost effective (NPV savings of $1.6 million) of the alternatives. Total estimated cost: $4,100,000. FY 2002: $4,035,000 for design and to initiate construction. Future Years: $65,000 to complete construction.

(7) Surveyboat M/V San Antonio Replacement – Galveston District (Continuing). The San Antonio is used for hydrographic surveying of the Galveston District's navigable waterways. Replacement is required because the existing vessel, built approximately 34 years ago, is aging and does not have the space or stability required and needed to utilize current hydrographic surveying equipment. The San Antonio is not able to execute fully the mission in inland waterway channels and offshore where sea conditions exceed 2 1/2 to 3 feet. The San Antonio replacement surveyboat will serve as the primary platform for obtaining multi-beam surveys. Total estimated cost: $938,000. Through FY 2000: $842,000 for design and to initiate construction. FY 2001: $96,000 to complete construction.

(8). Surveyboat C. M. WOOD Replacement – Galveston District (Continuing). The C.M. WOOD is used for hydrographic surveying of the Galveston District's navigable waterways. Replacement is required because the existing vessel, built approximately 33 years ago, is aging and does not have the space or stability required and needed to utilize current hydrographic surveying equipment. The C.M. WOOD is not able to execute fully the mission in inland waterway channels and offshore where sea conditions exceed 2 1/2 to 3 feet which limits utilization of the C.M. Wood to less than 150 days a year. Especially important is a capability to respond in a timely fashion to perform final surveys when a contractor completes dredging. A timely response reduces potential for disputes or claims over final quantities. An economic analysis compared the cost of replacement with the costs of leasing a surveyboat and the cost of modifying an existing boat to meet current operational requirements. This net present value analysis showed that acquisition of a new survey boat ($2,096,300) was less costly than either leasing ($4,007,300) or modifying an existing boat ($2,801,400). Total estimated cost: $940,000. Through FY 2000: $75,000 for design. FY 2001: $800,000 to initiate construction. FY 2002: $65,000 to complete construction.

(9). 55 foot Surveyboat M/V ALEXANDER Replacement - New Orleans District (Continuing). The ALEXANDER is used for hydrographic surveying of the New Orleans's District's navigable waters. Replacement is required because maintenance costs are escalating due to the age of the vessel and the design of the ALEXANDER is not well suited to its present mission. The ALEXANDER is a larger vessel than is needed to run cross sections in the Mississippi River deep draft crossings, its normal work site. Due to the implementation of global positioning systems on board the vessel, more cross sectional surveys are required.

Therefore, a smaller vessel, designed for a crew of two, would be more functional. Replacement of the existing surveyboat with a lighter smaller vessel will allow surveys to be done quicker and with less fuel, saving time and money. The net present value analysis comparing the cost of a new vessel with cost with leasing a similar vessel ($4,328,600) and with continuing to operate and maintain the ALEXANDER ($3,923,000) showed that acquisition of a new survey boat ($3,800,400) was the most cost effective of the alternatives. Total estimated cost: $1,404,000. Through FY 2000: $10,000 for design. FY 2001: $1,279,000 to initiate construction. FY 2002: $110,000 to substantially complete construction. Future Years: $5,000 to complete construction.

(10). Replacement Towboat, M/V RAYMOND C. PECK (MDC 2389) - Pittsburgh District (Continuing). The M/V PECK is a 1200 HP diesel powered towboat used in mobilization of the district repair fleet for major maintenance of 23 navigation structures on the Ohio, Allegheny and Monongahela Rivers; channel maintenance of 327 miles of navigable river; and for response to navigation emergency situations. The existing vessel, which was constructed in 1983, is underpowered relative to current demands which often results in double-tripping when tow size, river or weather conditions require. An economic analysis showed that it would be less than 2% cheaper to repower the PECK to 2400 HP than to replace it with a new vessel. However, while repowering is the cheaper of the alternatives, new construction was favored because of concerns regarding how well the repowered vessel would handle and because the repowered vessel would be likely to have significantly higher operations and maintenance costs to keep it operational for the assigned 40 year life. Total cost: $5,561,100. Through FY 2000: $81,100 for design. FY 2001: $5,160,000 to initiate construction. FY 2002: $175,000 for construction. Future years: $145,000 to complete construction.

(11). Survey Boat GRANADA Replacement, MDC 2425 - New Orleans District (Continuing). The GRANADA is used for hydrographic surveying of the New Orleans District's navigable waterways. Replacement is required because the existing surveyboat was constructed in 1971 and is approaching the end of its economic life. Maintenance costs are escalating due to the age of the vessel, and the steel hull has deteriorated over the years. In addition the weight of a steel hull significantly reduces speed and increases fuel consumption. An economic analysis comparing the alternatives of replacing the GRANADA with continuing to operate and maintain the existing plant favored the construction of a replacement. Total estimated cost: $1,613,000. Through FY 2000: $1,405,000 for design and initiate construction. FY 2001: $203,000 to substantially complete construction. FY 2002: $5,000 to complete construction.

(12). Derrickboat No. 6 Replacement, MDC 2446 - St. Louis District (Continuing). The existing Derrickboat No. 6 is over 30 years old. It requires replacement because the hull plating has become thin due to wear and age. In addition its hydraulic crane, which is 13 years old, requires extensive repair due to heavy use. An economic analysis comparing the cost of a new derrick boat with the cost of repairing/rehabilitating the existing boat favored acquiring a new boat because it would save over $2.2 million over its useful life. The economic analysis also established a present value savings of over $800 thousand. The Derrickboat No 6 is attendant plant in support of the Dredge POTTER, which is used for placing/moving dredging anchors, transferring supplies and materials between the riverbank and the dredge. During the season when the dredge is laidup, the Derrickboat supports repairs to the dredge, pipeline and other plant. Total cost: $1,518,800. Through FY 2000: $1,208,800 for design and initiate construction. FY 2001: $225,000 to substantially complete construction. FY 2002: $75,000 to complete construction.

(13). Panama City Crane Barge Replacement, MDC 2427 - Mobile District (Continuing**).** The Panama City Crane Barge performs snagging, riprap placement, minor clamshell and drag bucket dredging, pile driving, and other general navigation channel maintenance tasks on the Apalachicola-Chattahoochee-Flint River (ACF) system and the Gulf Intracoastal Waterway. The present crane barge was locally constructed in the 1960's making maximum use of components and materials obtained from surplus. It was constructed around a surplus deck barge built in 1940. With the present 40-ton crawler crane, the lifting capacity of the crane barge combination is grossly inadequate for the plant’s mission. A larger crane cannot correct the problem because it would be severely limited by the barge’s narrow 30' beam and 110' length. The replacement-floating crane will eliminate all the shortcomings of the existing plant. It will also be capable of supporting routine maintenance of locks and dams on the Black Warrior and Tombigee and Alabama Rivers, which now requires use of the larger capacity Debris Boat ROS, which is more costly to operate. Four alternatives were considered; construction of a new crane the least costly. The net present value of the PRIP alternative is $2.5 million, compared to $8.7 million, $8.8 million, and $12.7 million respectively for the Status Quo, Rehabilitation and Lease alternatives. Total

estimated cost: $7,446,800. Through FY 2000: $3,221,800 for design and initiate construction. FY 2002: $255,000 to substantially complete construction. Future years: $10,000 to complete construction.

(14). Survey Boat GATLIN Replacement, MDC 2428 - Mobile District (Continuing)**.** The Survey Boat GATLIN conducts hydrographic surveys in support of dredging and other channel maintenance activities for Gulf Coast harbors and for the stretch of Gulf Intracoastal Waterway within the district's area of responsibility. The existing survey boat was constructed in 1973 and will require major rehabilitation if it is not replaced. The existing vessel also suffers from a design deficiency, which limits its capacity to carry out its mission in rough seas. The proposed replacement will reduce the percentage of days when surveys cannot be done from 40 to 15%; it will also increase productivity through an increase in speed from 16 to 40 knots which will reduce transit times to survey sites. The economic analysis comparing the costs of a new vessel with costs of leasing a similar vessel, rehabilitating the GATLIN and the status quo showed that acquisition of a new survey boat was the most cost effective of the alternative. Total cost: $1,399,400. Through FY 2000: $34,400 to initiate design. FY 2001: $1,200,000 to complete design and initiate construction. FY 2002: $120,000 to substantially complete construction. Future years: $45,000 to complete construction.

(15). Fuel Oil Barge No. 64 Replacement, MDC 2411 - St Louis District (Continuing). Fuel Barge #64 is a single skin barge constructed of steel in 1972. The fuel barge is used to transport heavy fuel oil to the Dredge POTTER. The Oil Pollution Act of 1990 (OPA-90) requiring the replacement of single skin fuel barges with double skin barges mandate replacement. Design will be based on plans and specifications already developed by the Marine Design Center for double skin fuel barges. To comply with the law and based upon a cost differential (savings) of $264,591 over the life of a new barge and the present value of savings of $26,373, it is recommended that Fuel Barge No. 64 be replaced. Total estimated cost $1,333,300. Through FY 2000: $1,320,500 to complete design and initiate construction. FY 2001: $10,000 for construction. FY 2002: $2,800 to complete construction.

(16). Tender KIMMSWICK Replacement, MDC 2413 - St. Louis District (Continuing). The KIMMSWICK tends the Dredge POTTER. It is used for positioning the pipeline, placing anchors, towing the dredge between locations and transporting personnel. The KIMMSWICK is 29 years old. The hull plating is thin due to wear and age. The diesel engines are 10 years old and in need of overhaul. Electrical/mechanical systems are original and have become unreliable. Need for a dredge tender continues. The daily rate for a new vessel is estimated to be $1,800, and the present rate of the KIMMSWICK ($1,200) is expected to rise to $2,000 per day due to the need for major hull work and engine overhaul. Based on a savings of $1,137,197 over the life of a new vessel and a present value of savings of $290,645, it is recommended that the Tender KIMMSWICK be replaced. Total estimated cost: $1,984,300. Through FY 2000: $1,889,300 complete design and initiate and substantially complete construction. FY 2001: $95,000 to complete construction.

(17). Tugboat PILOT Replacement - Philadelphia District MDC 2317 (Continuing). The PILOT was built in 1941 (56 years old). It requires frequent maintenance and repair parts are expensive and extremely difficult to acquire. It has a single screw with 345 horsepower. The prospective new tugboat will have twin screw propulsion that has more maneuverability and is safer when towing barges and floating pipeline. Comparison of net present values of construction of a new tugboat versus the costs to place the PILOT in first class condition indicates estimated savings to the civil appropriations of approximately $12 million over the life of the new vessel. Total estimated cost: $2,495,000. Through FY 2000: $38,800 to initiate design. FY 2001: $5,000 for design. FY 2002 $2,225,000 to complete design and initiate construction. Future Years: $341,200 to complete construction.

(18). Survey Boat SENTRY Replacement, MDC 2399 - New York District (Continuing). The survey boat SENTRY's replacement will be used to perform year-round hydrographic survey work in offshore or unprotected waters as well as protected waters in the New York Harbor area. If the SENTRY is not replaced, New York District’s ability to fulfill its mission of maintaining the federal channels under authority of the River and Harbor Acts will be seriously degraded. An additional new requirement for the District is the Phase II deepening of Newark Bay, Kill Van Kull to Howland Hook, scheduled for construction from 1999 through 2008. The use of a new high technology survey vessel and equipment will be required. Secondary missions of the vessel will include side scan survey operations, water quality sampling, oceanographic survey station keeping, soil sampling, current meter placement, diver support, inspection tours, and emergency operations in New York

Harbor. Economic analysis shows that new construction is about $40,506 less per year (present value terms) than the status quo. The analysis also shows savings to investment ratio (SIR) of 1.23, that is, for every dollar invested in new construction, $1.23 in savings will result. Based upon a cost differential (savings) of $8.3 million over the life of a new vessel and present value savings of $2.9 million, it is recommended that the SENTRY be replaced. Total estimated cost: $2,595,600. Through FY 2000: $85,600 for design. FY 2001: $2,200,000 to initiate construction. FY 2002: $150,000 for construction. Future years: $160,000 to complete construction.

(19). Quarterboats 6381 and 6008 Replacement, MDC 2302 - Vicksburg District (Continuing): Quarterboats 6008 and 6381 were constructed in 1963 and 1960 respectively, and have reached the end of their useful lives. Neither vessel meets U.S. Coast Guard standards for housing personnel. Options considered in addition to the recommended option of replacing both boats with a single larger vessel: rehabilitating one or both of the existing boats, leasing quarterboats, and utilizing hotel/motels in the vicinity of work sites to house personnel. The most expensive alternatives were leasing and utilizing hotels/motels in the vicinity of the work sites. In addition, quarterboats for lease are not readily available and at some sites commute distances to motels/hotels would be as much as 80-90 miles. The alternative of rehabilitating the existing quarterboats was less costly than new construction; however, it would extend their economic life only by 20 years, while a new vessel would have a life of 40 years. For this reason, because the NPV differential between the two alternatives, analyzed over 20 years, was not great, the alternative of constructing a single new vessel is recommended. Total estimated cost: $10,417,100. Through FY 2000: $10,207,100 for design and to initiate construction. FY 2001: $200,000 for construction. FY 2002: $10,000 to complete construction.

(20). Fuel Oil Barge 407 Replacement, MDC 2412 - St. Louis (Continuing). A replacement 84,000, gallon diesel fuel barge in support of the Dredge POTTER is required to meet the requirements of the Oil Pollution Act of 1990 (OPA-90). OPA-90 requires that all fuel barges in use in 2002 be double-hulled. The existing barge 407 was constructed in 1934 and replated in 1969. It is again in need of replating and may not pass the next U.S. Coast Guard inspection. An economic comparison of the alternatives of either continuing to operate and maintain the barge 407 versus constructing a new barge shows a savings of approximately $200,000 over the life of the new vessel. Total estimated cost: $742,500. Through FY 2000: $737,500 for design and to substantially complete construction. FY 2001: $5,000 to complete construction.

(21). Crane Barge 7 Replacement, MDC 2360 - Rock Island District (Continuing): The existing crane barge consists of a crawler crane, mounted on a spud barge. The unit is used for structural repairs on the Illinois Waterway. The barge, constructed in 1959, was originally designed as a 34' x 104' x 8' deck cargo barge. This existing barge has reached the end of its useful life and is no longer economically reparable. The width of this spud barge makes it an unstable platform for a lift crane. Recent evaluations indicate the crane barge combination in its current configuration is operating at reduced safety and efficiency. The existing, fully operational 150-ton crane, purchased in 1988, will be mounted on the new spud barge. The replacement crane barge will be designed and constructed utilizing an existing concept being developed by Marine Design Center. This unit, when constructed and delivered, will continue to be used in direct support of the Illinois Waterway project to perform structural repairs to locks and dams, strike removal, and maintenance of channel regulating structures. Total Estimated Cost: $3,219,300. Through FY 2000: $3,156,700 for design and to initiate complete construction. FY 2001: $45,000 for construction. FY 2002: $17,600 to complete construction.

(22). Crane Barge 8 Replacement MDC 2361 - Rock Island District (Continuing): The existing crane barge consists of a crawler crane mounted on a spud barge. The unit is used for structural repairs on the Illinois Waterway. The barge, constructed in 1959, was originally designed as a 34' x 104' x 8' deck cargo barge, and is identical to Crane Barge 7. The barge has reached the end of its useful life and is no longer economically reparable. The width of the existing barge makes this an unstable platform for a lift crane. Evaluations indicate the crane barge combination is operating at reduced safety and efficiency. The existing, fully operational 150-ton crane, purchased in 1988, will be mounted on the new spud barge. The crane barge will use the standard design being developed by Marine Design Center. This unit will be used in direct support of the Illinois Waterway project for work similar to work being performed by Crane Barge 7 Replacement.

Total Estimated Cost: $3,219,900. Through FY 2000: $3,160,700 for complete design and initiate construction. FY 2001: $45,000 to substantially complete construction. FY 2002: $14,200 to complete construction

(23). Office Barge Replacement - Rock Island District, MDC 2320 (Continuing): The existing District Office Barge was fabricated in 1966 using a deck cargo barge built in the 1940s, pouring a lightweight concrete slab on the deck, and erecting a prefabricated metal pole building on the concrete slab. The existing office barge is in poor condition, with numerous hull leaks. The metal on the hull is suffering metal fatigue, and it has a short life expectancy. This office barge is used as a combination office/locker room/galley for the District Mississippi River structural repair crew. It is used year-round in all weather conditions. In addition, it is proposed to make the new office barge larger, which will result in the elimination of a second, smaller office barge. This will consolidate all personnel assigned to the section on one barge, reducing both the fleet size and winter heating requirements. The replacement barge design dimensions replicate existing barge dimensions so that the new office barge can be easily accommodated in tow with other barges. This replacement office barge will provide safe and efficient office space, locker room, and galley or break area for the thirty-person crew of the Mississippi River project. Total Estimated Cost: $2,506,600. Through FY 2000: $2,051,600 to complete design and initiate construction. FY 2001: $160,000 to substantially complete construction. FY 2002: $15,000 to complete construction.

(24). Replacement Derrickboat, MONALLO, MDC 2400 - Pittsburgh District (Continuing): The existing Pittsburgh District heavy-lift floating crane MONALLO II is a 145-ton marine revolver type crane. The vessel is used in support of major maintenance and repair activities for the twenty-three (23) navigation structures on the Ohio, Allegheny and Monongahela Rivers, channel maintenance of 327 miles of navigable rivers and emergency response situations. Since delivery of the existing Derrickboat in 1954, construction of new navigation projects in the Pittsburgh District with larger, heavier components has out-paced the capacity of this floating crane. The District currently and historically performs 4 to 5 lock chamber unwaterings per year. During these scheduled unwaterings, the miter gates are lifted, removed and repaired as necessary. In addition to utilizing the vessel for project maintenance, the District also maintains an emergency response capability to restore navigation in the event of natural disaster or man-made disasters such as barge breakaways and collisions. The Derrickboat MONALLO II is currently 42 years old and spare parts for the vessel and its machinery are increasingly difficult to locate and repairs increasingly more expensive. Acquisition of a replacement vessel with greater capacity will provide the capabilities required to safely and efficiently perform the operations and maintenance mission of the District. Total Estimated Cost: $9,020,400. Through FY 2000: $8,870,400 for design and to initiate construction. FY 2001: $100,000 to substantially complete construction. FY 2002: $50,000 to complete construction.

(25). Tender MONMOUTH Replacement, MDC 2347 - Rock Island District (Continuing): The MONMOUTH is a twin screw towboat built in 1943. The Mississippi River Structures Maintenance Section is used as a switchboat at work sites. The existing Tender MONMOUTH is fully depreciated, has reached the end of its useful service life, and is too small to meet mission requirements effectively. The hull has been repaired twice already and another repair will be needed soon to keep it operational. At best, the repair would extend the life of the boat ten years before other major components would need replacement or overhaul. Major repairs are not economical. The alternatives are deadlining the existing boat, leasing another boat (if one can be found) or replacement. Our economic analysis indicates that annual costs of leasing are approximately $120,000 more than annual costs of acquiring a replacement tender. The cost of leasing exceeds the cost of ownership after only seven years. Total estimated cost: $2,436,500. Through FY 2000: $2,426,500 for design and to substantially complete construction. FY 2001: $10,000 to complete construction.

(26). Replacement Towboat M/V PEARSON, MDC 2339 - Louisville District (Continuing). The Louisville District's existing towboat, the Motor Vessel PERSON, which was constructed in 1970, is powered with a total of only 1050 horsepower. With this limited amount of horsepower, the vessel is no longer adequate to safely transport the repair fleet. The repair fleet has grown with receipt of a new derrick boat in 1975, a new shop boat in 1981, and a new power barge in 1986. These additional pieces of equipment were added to efficiently work on the highlift locks and dams on the Ohio River. With the increased size of the Louisville Repair Station (LRS) fleet and the acquisition of the new gate lifter, Motor Vessel PERSON will not be able to safely transport the fleet during periods of high water or inclement weather. The feasibility of repowering the existing Motor Vessel PERSON was studied. The findings indicated that the hull dimensions

were not large enough; neither did it possess the structural integrity to accommodate a significant increase in horsepower. The proposed 4000 horsepower towboat will be used by the Louisville District to transport the repair fleet on the Ohio and Green Rivers. Total Estimated Cost: $7,051,800. Through FY 2000: $7,026,800 for design and to substantially complete construction. FY 2001: $25,000 to complete construction.

(27). Towboat GRAND TOWER Replacement, MDC 2235 - St. Louis District (Continuing): The existing vessel GRAND TOWER is a twin-screw diesel-powered towboat constructed in 1970. The GRAND TOWER is 24 years old and has reached the end of its useful service life. Hull integrity is marginal due to thin plating. Diesel engines are 10 years old and will require major overhaul within the next 3-5 years. The GRAND TOWER is used to tow a crane barge to locks on the Mississippi River for use in miter gate pulls, removal of drift; and repair of gate operating machinery. The existing vessel is also used during repair work to switch floating plant such as the Derrickboat SEWELL, Spare Miter Gate Barge and Crane Barge Number 1. As the fleet service boat, the GRAND TOWER is used to switch boats and barges at the Service Base Fleet into position for repair work, arrival, departure and material handling. At times, the GRAND TOWER is the only vessel available at the Service Base to respond to distress situations such as man overboard, loose barges from upstream, and retrieval of Corps floating plant which sometimes breaks loose. Total estimated cost: $3,120,000. Through FY 2000: $3,040,000 for design and to initiate construction. FY 2001: $70,000 for construction. FY 2002: $10,000 to complete construction.

(28). Gate Lifter Crane (Derrickboat) MDC 2305 - Louisville District (Continuing): The Ohio River and its tributaries provide over 2500 miles of navigable channel. In 1990, about 240 million short tons were moved by barge traffic. The system includes 60 navigation lock and dam facilities ranging from 10 to 150 years old. Since 1960, system-wide tonnage has more than doubled. This increased usage also results in increasing maintenance needs; closure costs have become higher and disruption to lock users is becoming more significant. Repair and maintenance typically involve replacement of miter and quoin contact blocks, replacement of pintles and gate painting. The whole process involves dewatering the chamber, jacking the gate "in-place" with temporary structural support, doing the repairs or maintenance "in-the-dry", and then realigning the whole gate to within 1/8 inch tolerances. Repairing both ends of the lock totals 35-42 days, trimming all time to the bare minimum using specialized equipment. Navigation accidents can require complete replacement of gate leaves. No spares are available and a new gate takes 3-6 months to fabricate. Fourteen options were considered. The selected option changes the whole process. It involves swapping gates and doing gate work away from the lock chamber. To implement this change, each lock requires the following: purchase of one pair of spare gate leaves; design and construction of storage and work areas for spare gates; design and modification of miter and quoin contact blocks and wall quoin contact blocks to quicken repairs and alignments; modification of existing gates to allow lifting by cranes; and, modification of the existing gate anchorage’s to allow faster gate removal. To swap the gates, Louisville District will purchase a 700 ton barge-mounted gate-lifter crane to be shared by all locks on the Ohio River or elsewhere as needed. For scheduled major repairs, the closure time savings per lock per event will be 20 to 25 days with the new process. An economic model computed system wide transportation savings from implementation of the selected option. The costs include the crane and all modifications for the gate-change-out capability at the locks. The net benefits are about $13 million annually for a 50-year projected life. The benefit/cost ratio is 4:1. A crane with the versatility and capacity needed cannot be rented. A competitive proposal process with a design/build contract will purchase the crane. This should allow crane manufacturers to propose standard equipment meeting our specifications. Particular emphasis is placed on compatibility with the unique features of the structures served during its 50-year life. To insure this, a team of experienced personnel will develop performance and evaluation criteria. Total estimated cost: $18,101,100. Through FY 2000: $17,976,100 for design and to substantially complete construction. FY 2002: $125,000.to complete construction.

(29). Replacement Work Layout Barge, MDC 2351 - Rock Island District (Continuing): The work layout barge, which is used by the Mississippi River Structures Maintenance Section for layout and repair of structural components of locks and dams, is one of the most critical pieces of floating plant for restoration of gate and lock operations to normal condition. The existing barge, constructed in the early 1950s by modifying two deck cargo barges and welding them together, has reached the end of its economic life. Its numerous leaking hull cracks must be constantly monitored. It is difficult to tow because it does not have standard dimensions and its draft is irregular. A long-term repair of the hull is not feasible because of the condition of the steel; temporary repairs to keep the barge serviceable are costly and of questionable value because of metal fatigue. A barge of the size and draft needed by the Rock Island District for work layout

operations cannot be leased or rented. Our economic analysis indicates that acquisition of a replacement barge would save almost $20,000 annually over the cost of leasing, if a barge could be leased. Total estimated cost: $4,253,000. Through FY 2000: $4,243,000 for design and substantially complete construction. FY 2001: $10,000 to complete construction.

d. Fixed Land Plant

(1). Facilities and Equipment Maintenance (FEM) System- Corpswide (Continuing). Facilities and Equipment Maintenance (FEM) was developed by the Department of Defense (DOD) Joint Logistics Systems Center (JLSC) to meet the needs of DOD organizations with equipment and facilities maintenance responsibilities. Presently the components of the Air Force, the Navy, the Marines, and the Army are in the process of implementing FEM to manage equipment and facility maintenance. FEM has two principal benefits for the Corps. First, it provides a standard system for managing maintenance requirements of Civil Works projects, facilities and equipment. In the absence of a standard system, field offices have either developed their own automated tools or have continued to manage with non-automated paper-based processes. Implementation of FEM will eliminate duplicative software development and maintenance efforts and extend the efficiencies of automated maintenance management to all Corps activities. Automation of maintenance management in general, and FEM in particular will extend equipment/plant service life, reduce maintenance labor costs, and reduce the replacement part inventory requirements. Second, FEM provides the Corps with a proven system based on an commercial off-the-shelf (COTS) application which can integrated with other Corps systems, especially the Corps of Engineers Financial Management System (CEFMS). In addition, FEM will standardize the maintenance business process Corps-wide. Total estimated cost: $6,875,000. Through FY 2000: $4,697,000. FY 2001: $2,178,000 to complete requirement.

(2). Document Imaging - Corpswide (Continuing): The Corps-wide document imaging program was initiated in FY 97 based on a pilot test and an economic analysis that showed a cost benefit ratio of 1:2. The pilot test demonstrated the feasibility the technology and confirmed the benefits assumed in the economic analysis. The principal benefits are increased productivity due to the savings from ready access to documents and other digitized material, and reduced space requirements due to a reduction in paper storage. During FY 99, the Corps determined to pause in its implementation of document imaging while it evaluated the costs and benefits of an expanded program to include workflow and electronic document management, along with elimination of onsite file storage requirements. The economic analysis for this Electronic Document Management System (EDMS) will be prepared and evaluated during FY 01. Total estimated hardware and software investment costs for document imaging alone: $12,500,000. Through FY 2000: $3,865,000 for a pilot test, and to initiate hardware and software acquisitions. FY 2001, FY 2002, and future years: To be determined based on the results of the economic analysis of the expanded document imaging, workflow and electronic document management program.

(3). Water Control Data Systems (WCDS) Software Development - Corpswide (Continuing): This software modernization effort involves the development of a standardized suite of software which all Corp activities will use to monitor, manage and operate the Corps water control facilities nationwide. This modernized UNIX driven, workstation-based automated information system will utilize the Corps standard database management system, ORACLE, and the Corps of Engineers Automation Plan (CEAP) network for moving data and information within the Corps. This modernization will greatly improve the Corps ability to perform its basic water management mission including water control decision making by improving hydrologic forecasting and making water control data universally available to all Corps users and Corps customers. These improvements will increase all project benefits (flood control, water supply, navigation, irrigation, hydropower, water quality, and recreation). In addition, this effort will save local software development costs, running in the neighborhood of $1 million annually. This effort is being managed in accordance with the requirements of the Army's Life Cycle Management of Information Systems (LCMIS) program. The projected Corps-wide benefit to cost ratio is well in excess of 1:1; a complete economic analysis will be included as part of LCMIS milestone I/II review and approval process. Total estimated software investment cost: $7,603,000. Through FY 2000: $5,750,000. FY 2001 Requirement $1,100,000. FY 2002 Requirement $600,000 Future Years: $153,000 to complete.

(4). Information Systems Modernization Program (ISMP) – Corpswide. The ISMP looks at all major software systems used in the U.S. Army Corps of Engineers with the goals of reducing data collection, verification and processing costs; reducing systems design, development and maintenance costs; and improving the accuracy, completeness, availability, timeliness and usefulness of information for operational users and decision makers, at all levels and across all functional USACE boundaries. To meet these goals, the Corps redesigns systems that do not meet current information needs, eliminates redundant and/or unnecessary systems, combines systems with similar functions, and integrates all systems to minimize duplicate data entry and maximize data sharing. The ISMP draws on the knowledge and experience of functional users and the expertise of information management specialists to provide USACE with a new information systems infrastructure that will support the mission of the Corps well into the next century and is consistent with hardware and communications capabilities of the Corps of Engineers Automation Plan (CEAP).

(a). P2 (Continuing). P2 is a commercial-off-the-shelf (COTS) replacement for the Project Management Information System (PROMIS) as the next generation of program and project management software. Like PROMIS, P2 will serve as the primary tool for project and technical managers within the Corps to maintain program and project data. Because PROMIS provides a single source of all project-related information for all programs and projects managed by field commands and interfaces with other modernized systems to assure single source data entry, it has brought on a major improvement in the Corps project management planning capability. However advances in commercial project management software, wider availability, Web interfaces, and lower costs, indicated that a COTS solution might provide a more cost-effective alternative to PROMIS. This was substantiated by a cost/benefit analysis of the COTS alternative. The principal benefits are lower costs to maintain and upgrade COTS software in future years. Total cost of PROMIS through FY 2000: $11,446,000 of which $6,338,000 funded by the revolving fund for development, deployment and for additions and betterments. Total estimated cost for P2: $15,722,000. Through FY 2000: $3,656,000. FY 2001 Requirement: $12,066,000 to complete development of the COTS alternative.

(b). Corps of Engineers Financial Management System (CEFMS) (Continuing). CEFMS is a SQL-based, fourth generation language, financial management system that features a relational database. The system will provide DOD and Non-DOD funds accounting, commercial-type cost accounting and a full range of revolving fund accounting. CEFMS is a optimum blend of interactive online and batch processing capable of satisfying the needs of project managers for accurate and timely data. It will also provide management with the required resource management information. CEFMS will operate at Corps headquarters, MSC Districts, Laboratories, and separate field operating activities, allowing all business processes to interact with each other. CEFMS benefits all Corps projects. Without its use, the Corps will be unable to provide external management with timely and accurate financial data. Total estimated cost: $39,079,400. Through FY 2000: $38,279,400 for development, deployment Corps-wide and additions and betterments. FY 2001: $800,000 to complete additions and betterments.

(5) Corps of Engineers Automation Plan (CEAP) (Continuing): The capital acquisition portion of CEAP was created to replace the Corps mainframe computing hardware consisting of leased Honeywell's at the division level and Corps-owned Harris computers at the district level. The Corps awarded a contract to the Control Data Systems, Inc., in October 1989 for hardware/software acquisition and support services. The contract was structured for maximum flexibility, not committing the Corps beyond the first year but providing the Corps with 10 annual renewal options. The contract also provided for a pilot test at the Southwestern Division, the Waterways Experiment Station, and the former Headquarters' Engineer Automation Support Activity. Based on pilot and stress test results and a cost comparison of various deployment scenarios, the Corps redeployed pilot test equipment to two large regional processing sites, one in Portland, Oregon and the other in Vicksburg, Mississippi. To maintain a viable corporate-wide system at these two regional sites, the Corps has invested in additional mainframe processing capacity, operating software, additional storage capacity, communications devices, and associated processors to link all Corps sites to the two regional centers. Total estimated cost: $84,910,200. Through FY 2000: $72,410,200. FY 2001: $4,500,000. FY 2002: $2,000,000. Future Years: $6,000,000.

(6) Recurring ADPE Requirements Corps-wide (Continuing): This grouped item includes general purpose microcomputers, graphics display terminals, interactive terminals, plotters, remote job entry devices, digital communications equipment supporting Corps ADPE. Also included are dedicated word processing centers, microcomputers used for such office functions as word processing, electronic mail, spread sheet applications, small data base applications, Headquarters

Local Area Networks centralization, and communications with main frame computers for storage and retrieval of management information. Recurring ADPE is utilized to improve the interfaces between separate computer configurations, to improve the communications transmission capability, and to replace ADPE that has reached the end of its useful life. Microcomputers are justified on a cost benefit basis to support both management and business, and scientific applications. The demand for quick access to accurate information at operational levels has generated requirements for ADPE in functional areas where it was previously absent or in functional areas where modern upgrade is required. All recurring ADPE requirements will be reviewed for consistency with the Corps of Engineers Information Systems Management Plan. FY 1999 requirement: $4,000,000. FY 2000 requirement: $4,400,000. FY 2001 requirement: $4,200,000. FY 2002 requirement: $1,800,000

e. Tools, Office Furniture and Equipment

(1). Headquarters Relocation (Continuing): The Corps has completed its relocation of Headquarters activities from the Pulaski Building to the 3rd floor of the General Accounting Office (GAO) Headquarters building at 441 G St. NW. In addition, the Corps proposes to lease an additional 17,500 square feet on the 6th floor of the GAO building on approximately the same terms favorable to the Corps as in the 3rd floor lease. This additional space, which was not available when the Corps initially planned its move from the Pulaski Building, will permit the Corps to relocate approximately 70 Headquarters personnel who are currently located at the Humphreys Engineer Center, near Ft. Belvoir, in Alexandria, Virginia, to the GAO Building. The additional cost of this relocation, including renovation of the space on the 6th floor, systems furniture, and phone and local area network wiring costs is $2,922,000. As previously, an equitable share of the renovation costs will be recovered via rent reductions over the life of the lease. Total estimated cost: $32,364,386. Through FY 2000: $25,825,936 for design and substantially complete construction and relocation. FY 2001: $6,538,450 to complete the relocation.

PROGRAM TITLE: Support for Others, FY 2002

JUSTIFICATION:

Support for Others (SFO), the manpower for which is separately resourced by the Office of Management and Budget, is reimbursable work performed by the Army Corps of Engineers and funded by various Federal agencies, states, political subdivisions of states, and other entities, under applicable Federal law. The program fills a void for many agencies, which do not have adequate capability to execute the engineering related needs; of their missions or manage the engineering or construction contracts with private firms. The reimbursable assistance the Army Corps of Engineers provides is typically related to technical oversight and contract management.

In FY 2002, the Army Corps of Engineers estimates support will be provided to over 60 various Federal agencies. The estimated dollar value of our efforts including construction is estimated to be $820 million. The actual program size will depend on several factors: the requesting agency's appropriation which is often not known until the first quarter of the fiscal year, final agency decisions made on how and when the appropriated funds will be dispersed for projects, and the magnitude of natural emergencies.

MAJOR FEATURES OF THE FY 2001 PROGRAM:

The work consists of one large (~$250 million) reimbursable program [Superfund program for the Environmental Protection Agency (EPA)] and support to 60 other Federal agencies ranging in size from a few thousand to approximately $100 million and some state/local governments for small technical services. Since 1998 the Corps has provided engineering, environmental and construction management services to the District of Columbia Public Schools to assist them in bringing their schools up to building and safety code requirements. The Corps supports EPA on its Superfund and Construction Grants programs as well as performing review and coordination of the planning, design and construction of EPA facilities.

Examples of work for other Federal agencies in FY 2001 include environmental assistance to DOE; environmental compliance assessments for the Natural Oceanic and Atmospheric Administration (NOAA); construction grant monitoring for the Department of Housing and Urban Development; design and construction of facilities for Department of Justice subagencies Immigration and Naturalization Service and Bureau of Prisons; and study, design, engineering, and construction assistance for various Department of Interior subagencies such as the National Park Service, the Fish and Wildlife Service, and the Office of Insular Affairs. One potentially large and unpredictable program is that of the Federal Emergency Management Agency (FEMA). The largest component support to FEMA occurs as a result of natural disasters where the type and magnitude of support is unpredictable.

ACCOMPLISHMENTS IN FY 2002

The Corps executed approximately $860 million in support of other agencies programs in FY 2002 which includes the following examples: Environmental Restoration related work - $260 million of work related to the EPA's programs and $65 million of environmental restoration work for other agencies and Facilities and Infrastructure related work - $535 million of work related to engineering, design and construction such as the design and construction of dormitories, administration and detention facilities for the Immigration and Naturalization Service, emergency management in support of FEMA and housing and control tower construction for the Federal Aviation Agency.

AUTOMATION COSTS

General: The Army Corps of Engineers utilizes automated information systems in all phases and aspects of its operations from the planning and design of Corps projects through their operation and maintenance; from the collection and analysis of hydrographic data to control flows in the nation's rivers to the management of fiscal and human resources; and from the search for legal precedents to the review of construction contractor performance histories. Civil Works expenditures for automated information systems include acquisition of commercial software packages and the design and development of applications to meet unique engineering requirements; the acquisition of personal computers for use on engineers' desks and of mainframes for processing centers used by thousands of employees; and the leasing of long distance lines for E-mail and high speed transfer of engineering and other data between Corps sites.

Projected Fiscal Year (FY) 2002 automation costs are displayed under three main categories: acquisition of hardware and associated commercial off-the-shelf software (COTS), automated information systems (AIS), and personnel.

Hardware. Table A shows projected hardware and associated COTS acquisition costs for FY 02. For FY 02 the Corps has programmed $3.8 million of Revolving Fund resources for two items of Fixed Land Plant: Corps of Engineers Automation Plan (CEAP), and Recurring ADPE Requirements as shown in the Revolving Fund Plant Replacement and Improvement Program (PRIP) section of the Remaining Items justification sheets. In addition to the $2 million identified for additional capital acquisitions under CEAP, approximately $13.3 million will be required in FY 02 to operate and maintain the two data processing centers and for the communications network linking Corps sites with these centers.

The remaining Civil Works requirements for automation hardware are for items such as engineering work stations, file servers, personal computers, printers and other peripheral equipment costing less than $25,000 or items which will be utilized only in support of a single project, including research and development activities at Corps laboratories, and will be acquired with project funds. Such items are not eligible for Revolving Fund PRIP financing since they do not meet the threshold for capitalization, or do not support more than one project. The estimated FY 02 Civil Works requirement for engineering work stations, printers and other peripheral equipment to support technical, scientific and engineering staff is $21.8 million; for personal computers, printers and other peripheral equipment to support office automation and other general purpose office automation requirements is $55.4 million; for file servers, printers and other peripheral equipment which support data and voice communications is $48.4 million; and for engineering work stations, file servers, personal computers, printers and other peripheral equipment to support automated information systems is $6.6 million. Funding for these items will be either through the General Expenses appropriation, district or laboratory overhead accounts, or specific Civil Works programs or projects.

Software: Table B shows estimated FY 02 Civil Works funding requirements to support automated information systems (AIS). These AIS have been grouped by whether they are in use Corps-wide or were developed to meet local requirements. Corps-wide AIS have also been grouped by their role in the design, construction, operation and maintenance of Corps projects, and management of the Civil Works program. Included among the AIS are the Water Control Data System standardization and modernization effort, currently being completed; the Facilities and Equipment Maintenance System (FEM), a standard Department of Defense (DoD) system, that the Corps is acquiring from the Department of the Navy which is the DoD proponent; P2, the program and project management system replacement, and the Corps of Engineers Financial Management System (CEFMS), which has been improved after deployment Corps-wide. These items are all displayed in the FY 02 Revolving Fund PRIP request. Any difference between the FY 02 requirements for these systems reflected in Table B and the amounts shown in the Revolving Fund PRIP portion of the Remaining Items justifications are headquarters management or maintenance costs during deployment which should not be capitalized in the PRIP.

Personnel. Table C is an estimate, by activity, of the direct labor costs for the professional Computer Specialists, Computer Scientists, Programmers, Systems Analysts, Programmer Analysts, Information Management Planners, Telecommunications Specialists, and the Computer Technicians and Assistants which are charged to Civil Works projects and appropriations, based on actual direct labor costs in FY 01. Not included are the costs of visual information specialists, photographers, print specialists, librarians, mail clerks, or the budget analysts and other support personnel who comprise a typical Corps information management office.

TABLE A
HARDWARE ACQUISITION

Item	PRIP Funded	FY 2002 Civil Works Requirement
Corps of Engineers Automation Plan (CEAP)	X	$2,000,000
Document Imaging	X	TBD
Miscellaneous Automatic Data Processing Equipment (costing more than $25,000 and capitalized through the Plant Replacement and Improvement Program)		
Great Lakes and Ohio River Division		$445,000
Mississippi Valley Division		$420,000
North Atlantic Division		$150,000
Northwestern Division		$390,000
South Pacific Division		$50,000
Southwestern Division		$60,000
Laboratories		$260,000
Subtotal Miscellaneous ADPE	X	$1,775,000
Engineering work stations, file servers, personal computers, data and voice communications, and printers and other peripheral equipment costing less than $25,000 and therefore not capitalized:		
--automated engineering tools		$21,808,000
--office automation and other general purpose		$55,417,000
--communications		$48,364,000
--standard automated information systems support		$6,628,000
Subtotal		$132,217,000
Total		$135,992,000

TABLE B
AUTOMATED INFORMATION SYSTEMS

	STATUS	FY 2002 Civil Works Requirement
CORPS-WIDE SYSTEMS		
Engineering		
Architect-Engineer/Construction Contract Admin Support System (A/CCASS)	Upgrade	$509,000
Computer Aided Structural Engineering (CASE)	Maintenance	$730,000
Equipment Manual	Maintenance	$174,000
Cost Engineering Support Systems (CACES)	Maintenance	$570,000
Numerical Models	Maintenance	$1,943,000
Pavement-Transportation Computer Assist Struc Eng (PCASE)	Maintenance	$40,000
Construction Criteria Base/Spec Intact (SPECSINTACT)	Maintenance	$125,500
GIS Viewer for Corporate Datasets	New	$355,000
Construction		
Resident Management System (RMS)	Maintenance	$810,000
Operations and maintenance		
Bridge Information System (BIS)	Maintenance	$55,000
Water Control Data System (WCDS)	Upgrade	$1,090,000
Operation and Maintenance Business Information Link PLUS (OMBIL PLUS)	Maintenance	$3,048,000
ENGLINK	Maintenance	$2,295,000
NSDI Clearing House Web Site	Maintenance	$105,000
Deployable Tactical Operations Systems	Maintenance	$890,000
Facility and Equipment Maintenance System (FEM)	New	$1,663,000
Registry of Skills	New	$60,000
Project/program management		
Project and Program Management Information Sys (PROMIS)	Maintenance	$614,000
Real Estate Management Information System (REMIS)	Maintenance	$1,466,000
Project and Resource Information Sys for Managers (PRISM)	Maintenance	$318,000
Civil Work O&M Automated Budget System (CWOMABS)	Maintenance	$300,000
Force Configuration (FORCON)	Maintenance	$51,000
Corps of Engineers Manpower Requirements System (CERMS)	Replacement	$311,000
P2	Replacement	$673,000

TABLE B
AUTOMATED INFORMATION SYSTEMS

	STATUS	FY 2002 Civil Works Requirement
Finance and Accounting		
Corps of Engineers Financial Management System (CEFMS)	Upgrade	$6,300,000
Corps of Engineers Enterprise Management Info System (CEEMIS)	Maintenance	$1,500,000
Other		
Automated Personal Property Management System (APPMS)	Maintenance	$307,000
Vehicle Information Management System (VIMS)	Maintenance	$128,000
Electronic Mail MCX	Maintenance	$1,175,000
Corps of Engineers Automated Legal System (CEALS)	Maintenance	$134,000
Laboratory Information System	Maintenance	$48,000
Finacial Administration Management Information System (FAMIS)	Maintenance	$26,000
Accident Experience and Analysis System (AEAS)	New	$60,000
Internet Center of Expertise	Maintenance	$270,000
COE Electronic Document Management System (CEEDMS)	Upgrade	$1,981,000
Frequency Management System (FMS)	Maintenance	$42,000
Data Management	Maintenance	$295,000
Information Technology Investment Portfolio System (ITIPS)	Replacement	$87,000
Virtual Library Program	Maintenance	$311,000
Small Business Information System	Maintenance	$45,000
Business Information Integration Technology	Maintenance	$267,000
Information Architecture 2000+	New	$225,000
Corps Lessons Learned System	New	$120,000
Video Teleconferencing	Maintenance	$108,000
Knowledge Management	New	$150,000
CORPS LOCAL SYSTEMS		
Mississippi Valley Division		
Dam Performance Monitoring Systems	Maintenance	$27,000
Lower Mississippi River Environmental Studies	Maintenance	$81,000
Lock Control System	Maintenance	$786,000
North Atlantic Division		
Production Resource Operating System (Baltimore)	Maintenance	$18,000
Cadastre Information System (Baltimore)	Maintenance	$46,000
Automated Hydrographic Surveying System (Baltimore)	Maintenance	$55,000

TABLE B
AUTOMATED INFORMATION SYSTEMS

	STATUS	FY 2002 Civil Works Requirement
Automated Topographic Survey System (New England)	Maintenance	$220,000
Automated Hydrographic Surveying System (New England)	Maintenance	$275,000
Northwestern Division		
Construction Management System (Omaha)	Maintenance	$17,000
Computerized Maintenance Management System (Omaha)	Maintenance	$22,000
Power Plant Control System (Omaha)	Maintenance	$20,000
Hydro System Seasonal Regulation (Division-wide)	Replacement	$20,000
South Atlantic Division		
Project Related Data Systems (Savannah)	Maintenance	$8,000
Lessons Learned System (Savannah)	Maintenance	$8,000
Operations Administration System (Savannah)	Maintenance	$20,000
Workload Management System (Savannah)	Maintenance	$24,000
Savannah Asbuildts Tracking System	Maintenance	$6,000
Information Management Procedure for Automation (Mobile)	Maintenance	$8,000
Computerized Report of Survey (Mobile)	Maintenance	$7,000
Programs and Project Delivery System (Division)	Maintenance	$109,000
South Pacific Division		
Regional Project Management Business Process (Division)	Maintenance	$110,000
TOTAL		$33,397,500

TABLE C
AUTOMATION PERSONNEL COSTS

ACTIVITY	CIVIL WORKS AUTOMATION PERSONNEL CIVIL WORKS COSTS
GREAT LAKES AND OHIO RIVER DIVISION	
HUNTINGTON DISTRICT	$962,000
LOUISVILLE DISTRICT	$728,000
NASHVILLE DISTRICT	$761,000
PITTSBURGH DISTRICT	$750,000
BUFFALO DISTRICT	$399,000
CHICAGO DISTRICT	$438,000
DETROIT DISTRICT	$308,000
DIVISION OFFICE	$134,000
DIVISION TOTAL	$4,481,000
MISSISSIPPI VALLEY DIVISION	
MEMPHIS DISTRICT	$336,000
NEW ORLEANS DISTRICT	$954,000
ST. LOUIS	$782,000
VICKSBURG DISTRICT	$984,000
ROCK ISLAND DISTRICT	$954,000
ST PAUL DISTRICT	$106,000
DIVISION OFFICE	$380,000
DIVISION TOTAL	$4,497,000
NORTH ATLANTIC DIVISION	
BALTIMORE DISTRICT	$834,000
NEW YORK DISTRICT	$447,000
NORFOLK DISTRICT	$458,000
PHILADELPHIA DISTRICT	$504,000
NEW ENGLAND DISTRICT	$371,000
DIVISION OFFICE	$126,000
DIVISION TOTAL	$2,739,000

TABLE C
AUTOMATION PERSONNEL COSTS

ACTIVITY	CIVIL WORKS AUTOMATION PERSONNEL CIVIL WORKS COSTS
NORTH PACIFIC DIVISION	
PORTLAND DISTRICT (Includes Western Regional Processing Center.)	$2,822,000
SEATTLE DISTRICT	$600,000
WALLA WALLA DISTRICT	$628,000
KANSAS CITY DISTRICT	$726,000
OMAHA DISTRICT	$576,000
DIVISION OFFICE	$420,000
DIVISION TOTAL	$5,772,000
PACIFIC OCEAN DIVISION	
ALASKA DISTRICT	$217,000
DIVISION OFFICE	$98,000
DIVISION TOTAL	$315,000
SOUTH ATLANTIC DIVISION	
CHARLESTON DISTRICT	$191,000
JACKSONVILLE DISTRICT	$760,000
MOBILE DISTRICT	$1,219,000
SAVANNAH DISTRICT	$331,000
WILMINGTON DISTRICT	$673,000
DIVISION OFFICE	$337,000
DIVISION TOTAL	$3,513,000
SOUTH PACIFIC DIVISION	
LOS ANGELES DISTRICT	$1,580,000
SACRAMENTO DISTRICT	$1,411,000
SAN FRANCISCO DISTRICT	$1,349,000
ALBUQUERQUE DISTRICT	$545,000
DIVISION OFFICE	$195,000
DIVISION TOTAL	$5,078,000

TABLE C
AUTOMATION PERSONNEL COSTS

ACTIVITY	CIVIL WORKS AUTOMATION PERSONNEL CIVIL WORKS COSTS
SOUTHWESTERN DIVISION	
FORT WORTH DISTRICT	$555,000
GALVESTON DISTRICT	$516,000
LITTLE ROCK DISTRICT	$663,000
TULSA DISTRICT	$874,000
DIVISION OFFICE	$291,000
DIVISION TOTAL	$2,899,000
LABORATORIES	
WATERWAYS EXPERIMENT STATION (Includes Central Regional Processing Center.)	$3,405,000
TOTAL	$3,405,000
HEADQUARTERS/HUMPHREYS ENG SUPP CENT/WATER RES SUPP CENTER	$4,751,000
USACE FINANCE CENTER	$302,000
GRAND TOTAL	$37,752,000

Justifcation of Estimates for Civil Functions Activities
Department of the Army, Corps of Engineers
Fiscal Year 2002

Summary of Budget Request for Inland Waterway Trust Fund Projects

Project Name	Construction, General Appropriation $	Inland Waterways Trust Fund $	Total $
Construction			
Inner Harbor Canal Lock, LA	5,000,000	5,000,000	10,000,000
Kentucky Lock and Dam, Tennessee River, KY	7,200,000	7,200,000	14,400,000
Locks & Dams 2, 3 & 4, Monoghela River, PA	17,235,000	17,235,000	34,470,000
Marmet Lock, Kanawha, River, WV	3,100,000	3,100,000	6,200,000
McAlpine Locks & Dams, IN & KY	6,816,000	6,816,000	13,632,000
Olmsted Locks and Dam, IL & KY	17,000,000	17,000,000	34,000,000
Robert C. Byrd Locks and Dam, WV & OH	650,000	650,000	1,300,000
(Locks)	(221,000)	(221,000)	(442,000)
(Dam Rehabilitation)	(429,000)	(429,000)	(858,000)
Winfield Locks and Dam, WV	300,000	300,000	600,000
Total - Construction	57,301,000	57,301,000	114,602,000

Justifcation of Estimates for Civil Functions Activities
Department of the Army, Corps of Engineers
Fiscal Year 2002

Summary of Budget Request for Inland Waterway Trust Fund Projects

Project Name	Construction, General Appropriation $	Inland Waterways Trust Fund $	Total $
Rehabilitation			
Lock and Dam 3, Mississippi River, MN (Rehab)	400,000	400,000	800,000
Lock and Dam 12, Mississippi River, IA (Rehab)	2,453,000	2,453,000	4,906,000
Lock and Dam 24, Mississippi River, IL & MO (Rehab)	4,019,000	4,019,000	8,038,000
London Locks and Dam, Kanawha River, WV (Rehab)	2,150,000	2,150,000	4,300,000
Total - Rehabilitation	9,022,000	9,022,000	18,044,000
Gross Total - Construction and Rehabilitation	66,323,000	66,323,000	132,646,000
Reduction for Anticipated Savings and Slippage	(5,323,000)	(5,323,000)	(10,646,000)
Net Total	61,000,000	61,000,000	122,000,000

Justification of Estimates for Civil Works Functions Activities
Department of the Army, Corps of Engineers
Fiscal Year 2002

SUMMARY OF APPROPRIATIONS

APPROPRIATION TITLE	FY 2001 Appropriation 1/	FY 2002 Request	Increase (Decrease)
General Investigations	$ 138,000,000	$ 130,000,000	$ (8,000,000)
Construction, General	1,346,000,000	1,324,000,000	(22,000,000)
Operation and Maintenance, General	1,854,000,000	1,745,000,000	(109,000,000)
Flood Control Mississippi River and Tributaries	309,000,000	280,000,000	(29,000,000)
Regulatory Program	125,000,000	128,000,000	3,000,000
Flood Control and Coastal Emergencies	0	0	0
General Expenses	152,000,000	153,000,000	1,000,000
Revolving Fund	0	0	0
FUSRAP	140,000,000	140,000,000	0
Permanent Appropriations	16,000,000	15,992,000	(8,000)
Total	$ 4,080,000,000	$ 3,915,992,000	$ (164,008,000)

1/Consolidated Appropriations Act, 2001, P.L. 106-554. Includes a rescission of .22 percent.